The Manufacturing and Construction Journal of the Textile Industry

COTTON

Entered as second-class matter at the postoffice, Dalton, Ga., under Act of March 3, 1879.

Volume 90.
Number Twelve.
$1.00 a Year.

OCTOBER, 1926

Published monthly by
W. R. C. Smith Publishing Co.
Dalton and Atlanta, Ga.

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LINK-BELT

SILENT CHAIN DRIVES

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"Advertising Creates Our Demand ...Kaumagraphs Protect It."

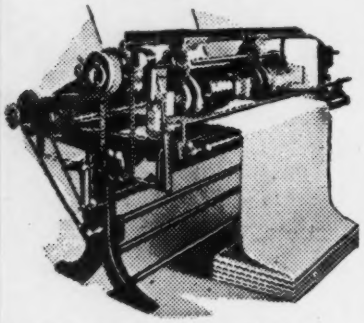
An interview with Mr. J. R. Howlett of Howlett & Hockmeyer, shows how this company insures full benefit from its advertising of Waterside Corduroys and Waterside Suedelike.

CAMPBELL puts its soups in cans that bear an unmistakable Campbell label. Huyler puts its candy in packages that have the unmistakable Huyler wrapper. But you can't put textiles, sold over the counter by the yard, into labelled cans or wrappers.

Yet what is the textile manufacturer to do? He must find some way to identify his goods. If he does not, how is the customer who asks for his goods by name to know that she is getting what she asks for? How is the manufacturer to prevent unscrupulous dealers from giving her something else which he represents as the genuine?

Couldn't Advertise Without It

How, indeed? If you want to know the answer, ask Mr. J. R. Howlett of Howlett and Hockmeyer. This company needs no introduction as manufacturers of Waterside and Suedelike Corduroys. Its products are among the biggest successes in the textile industry. And a large measure of its success is due to its advertising.



"Kaumagraphs can be applied by machine on the back or along the selvage."

Yet to get the benefit of this advertising, Howlett & Hockmeyer had to find a way to trademark their goods and to trademark them as clearly, as simply and as unmistakably as the label indentifies Campbell, the wrapper identifies Huyler.

A bolt of Waterside Corduroys showing the Kaumagraph-applied mark along the selvage.

And Mr. Howlett found a way —the Kaumagraph Transfer method.

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The Kaumagraph Transfer method is the only practical method of applying trademarks to corduroys, silks, cotton goods, woolens, hosiery and other textile fabrics.

With Kaumagraphs you can stamp your trademark on any fabric, in any color. Not a smudgy, smeary mark, but a really beautiful mark that won't blur or discolor.

It is by this method that the trademarks of Waterside Corduroys and Waterside Suedelike are applied along the selvage to every yard of the material.

"We felt it was necessary," says Mr. Howlett, "to identify our goods in this way, in order to prevent substitution of inferior cloths, to get the benefit of our national advertising, and as a means of protection to our customers and ourselves. For in our advertising, we tell customers to look for this trademark to make sure they get the genuine. The Kaumagraph Transfers are put on by machine as part of another operation. We have been using them for 7 or 8 years and find them highly satisfactory."

Kaumagraphs can be applied by machine on the back or along the selvage; by hand in one second as an end stamp; or on the toes of hosiery at the rate of a dozen a minute.

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COTTON

Published Monthly by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor. R. W. PHILIP, Associate Editor.

Editorial and Advertising Department, Grant Bldg., Atlanta, Ga. Subscription price, $1.00 per year; Canada, $1.50 a year; Foreign, $2.00 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The names of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

Volume 90

Member Associated Business Papers, Inc.
Member Audit Bureau of Circulation.

No. 12

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C-M Ideas

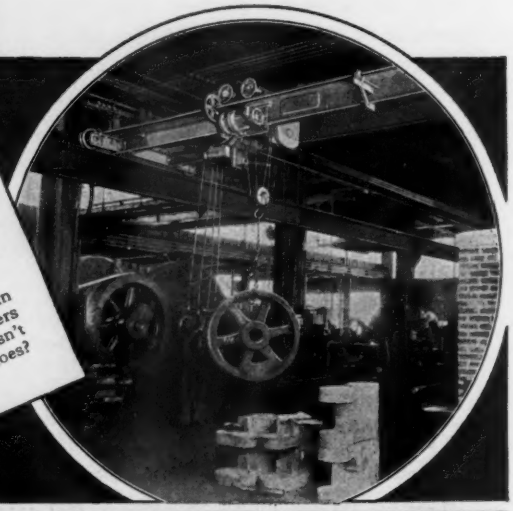
CHECK up on the concerns who have adopted "C-M" Ideas of material handling and you'll discover unmistakable signs of PROGRESSIVE MANAGEMENT.

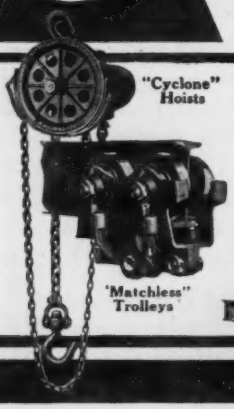
Illustrated on this page are typical examples of the practical and correct solution to problems of material handling. Your problems are different only in the sense that they require different combinations of "C-M" Overhead Material-Handling Equipment. "C-M" Ideas can determine the correct combination.

ABOVE is an example of a "C-M" Material-Handling Idea that has application to machine shops, foundries, warehouses, stock yards, and many other types of business. This complete "C-M" Overhead Track System includes two and three-way switches, "Matchless" Trolleys and "Cyclone" Hoists. It is so arranged that all materials may be handled direct from two receiving rooms; to and from every machine; and direct to two shipping rooms. *There's no lost motion in this plant!*

YOU'LL notice in the view at the right that *only one man* is handling material. The 5 ton "C-M" Electric Hoist submerged between the beams of a "C-M" Traveling Crane have made it possible for this man to lift and convey heavy castings with no more effort than is required to pull his cap down on his head.

Do you get the "C-M" Idea back of this? One man doing the work of from two to ten or more. The others released for productive work. If that doesn't answer the labor problem, what does?





"Cyclone" Hoists

"Matchless" Trolleys

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OVERHEAD HOISTS CRANES TROLLEYS TRACK SYSTEMS

"C-M" is the trademark of a complete line of Overhead Material-Handling Equipment, backed by an organization ably qualified to correctly apply that equipment to every material-handling condition. "C-M" Engineering Service is gratis. The "C-M" policy is based on "*Facts* to show *YOU* a way to *MORE PROFIT*." Write for particulars.

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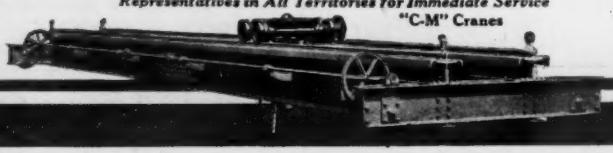
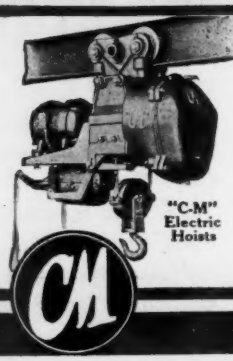
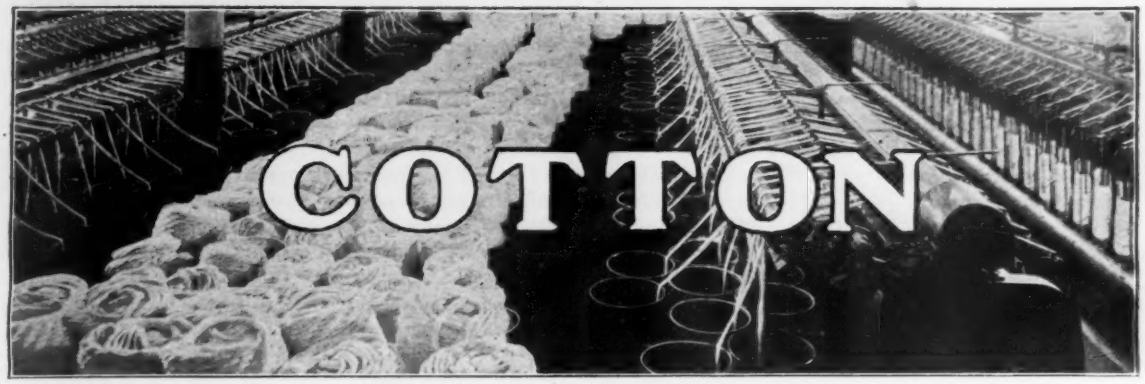


"C-M" Cranes



"C-M" Electric Hoists



October, Nineteen-Twenty-Six

Leadership as an American Asset

George Bernard Shaw, in his seventieth anniversary address in London recently, paid American business and industrial management a fine compliment when he said that its progressive leadership is "unfortunately" a hampering obstacle to the furtherance of socialism.

The world's outstanding display of leadership since the war has been that appertaining to business and industrial America. It envisages a virtually new form and orientation of leadership greatly amplified. And it is working towards a decisive negation of theoretical socialism, and kindred isms, though perhaps in the direction of something not entirely dissimilar.

"I believe that we are, almost unnoticed, in the midst of a great revolution, or transformation, of the whole superorganization of our economic life," says Herbert Hoover. "We are passing from a period of individualistic action into a period of associated activities. I believe that through these forces we are moving towards some sort of industrial democracy. We are upon its threshold if these agencies can be directed solely to constructive performances in the public interest."

Whatever it is moving towards, the forces that are at work can achieve soundly, safely, and economically only through good leadership. And that is what American business and industry is supplying in increasing quantities and improving quality.

The man or concern that operates aloofly has become the exception. The one who operates only with thought of the highest possible profit has become something of a pariah. Competition within trades is giving way to cooperation for, in part, meeting the more rife competition between trades.And the branches of business and industry are being bound together more and more by a quickened consciousness of common interests and, above all, common obligations to each other and the public.

Out of all this comes leadership and a perfecting of leadership. More and more is this leadership, as Secretary Hoover has noted, taking on an aspect of professionalism; that is, a realizing of obligations and duties which transcend the immediate interests of the individual or concern—obligations to business and industry as sciences and arts and to the public welfare which, in the long run, must always underlie progress and prosperity.

This leadership is trained in and functions through innumerable cooperative media, associations, institutes, committees and what not. It seems unbelievable that in the last six years no less than 1,000 business and industrial conferences have taken place under the auspices of the U. S. Department of Commerce, not by command on the part of the Government, not for the purpose of amplifying but rather to head off governmental interferences. The number that have taken place otherwise are beyond counting.

Hence it is not surprising that post-war reconstruction was completed in America within a few years. Nearly all the manifold domestic dilemmas that followed the war have evaporated. Only a few years ago an epidemic of strikes threatened national stagnation. Even Bolshevism seemed to be getting a firm foothold in America, as shown by events like the general strike in Seattle. Conditions were never before so favorable to the spread of radicalism, to the application of doctrinal experiments, to the advance of socialism via the mechanics of government. Yet nothing that bodes lasting ill has come of it. America today has probably the most satisfied working class the world has ever known and perhaps on the whole the most popular business and industrial situation.

And this result is attributable to, more than all else, leadership—not political but, in that sense, private. American business men and industrialists have gone far ahead of the politicians in working out even those problems that are involved with government, both here and abroad. Wall Street, however that realm may be hated or feared, has done more than all the cabinets towards saving Europe from utter demoralization. American bankers made it possible for Great Britain to resume the gold standard as early as was done. Two American business men made the economic and financial features of the Versailles treaty workable. To American business leaders may be accredited as much sanity as has been displayed in the handling of the difficult war debts problem.

But as to foreign affairs this leadership has not functioned so finely as in the domestic realm, where it has provided manifold examples of most excellent statesmanship.

It is on this leadership that the course if not the future of America depends. Industry has become so overwhelming and complicated that nearly every branch of American life must stand or fall, go ahead or recede, with it. And the same conditions make it so that the big problems of industry, and in great part of the general public, can be

solved only by itself. And these can be solved only through leadership.

Secretary Hoover is probably right in attributing virtually all the social gains, shortcomings and ills of the time to the efficiency or the failure of leadership. And he has rendered a distinct service to America in making his department of government a school of business and industrial leadership and business statesmanship. But he has only helped accelerate the development that has long been underway and one that bodes much for the future.

Polishing the Immigration Bars

In the absence of action to the contrary, there will go into effect on July 1 next a new and interesting scheme of distributing quotas of admissable immigrants among the peoples of Europe. Present quotas are based on the census of 1890, allowing each European country to send us annually as many as 2 per cent. of the total of its emigrants residing in this country 36 years ago. This was adopted as an approximate distribution in line with the national origins of the population of the country at the present time.

Some one suggested what appeared to be a more exact principle of distribution. It was adopted by Congress but because of the detail involved in working it out its application was deferred until 1927. Under this scheme the distribution would be in accordance with the make-up of the population of the country, in terms of national origins, in 1920. The maximum number of quota immigrants allowed entrance would be 150,000, against about 164,000 under the 2 per cent scheme.

The new scheme calls for interesting historical and statistical findings. That is, it must be determined in what proportions are peoples of other white nations represented in the present white stock, old and new, in the country. This can be approximated only, as data for exact determination are lacking.

Available data indicate, however, that racial integrals won't be affected much by the new scheme. Under it the peoples of Northwestern Europe will have about the same proportion of immigrant quotas as at present, these being about 84 per cent of all. The new scheme, however, will make quite radical changes in the distribution of that proportion among so-called "Nordic" peoples. The British quota probably will be more than doubled, while those of the Irish Free State and the Scandinavian countries will be cut two-thirds or more. Germany's will be reduced one-half or more. Italy's and Russia's will be increased somewhat but will continue to be small, as with the Balkan countries. Since the Scandinavians are the purest of "Nordics", the scheme seems to have satiric possibilities.

Most of the authorities having to do with immigration think the national origins scheme should be abandoned. It is not unlikely that Congress will give it a re-consideration at the coming session. Even if it is not taken out of the law it appears that the President may, by the exercise of discretion apparently given him in the premises, defer the scheme's application indefinitely.

It would seem that in perfecting immigration restrictions, fields other than debatable history might for the present be given attention. One is that of illegal entry. It is probable that more immigrants are now "bootlegged" into the country than are admitted under the prevailing regulations. The "bootlegged" ones as a rule are of the most undesirable character.

Involved in that and other problems having to do with checking up on immigrants already here is the question of registration. Shall all in the country be required to carry cards?

A more discriminatory process of selection than comprised in any broad quota scheme would seem to be desirable. At present no account is taken of occupations, or of the needs of communities where those coming propose to reside.

Great progress, however, has been made in the development of intelligent restrictions on immigration from abroad. When one remembers that less than ten years ago protests against even a simple literacy test were still so strong that the President of that time, like several predecessors, could be induced to veto a restriction bill on the ground that broadly speaking all immigrants wanting to come should be admitted, the progress becomes astounding.

Industrial Economics.

To the average mill man unversed in the subject, the word "economics" and what it stands for is more or less of a closed book. He usually classifies an economist as a man who can talk or write interminably on some dry-as-dust subject that is full of statistics and other data that may mean much to the expounder but which has strong sleep producing tendencies for the operating executive. He often feels that economics is something that doesn't concern him anyway, and so he lets it severely alone and hopes the bankers or college professors or whoever it is that is supposed to look after such things, will make a good job of it and leave him to run his mill in peace.

As this viewpoint is all wrong, the managers of a well known group of southern mills several years ago set about finding a way to introduce the subject of economics into their educational programs. After a careful examination of available material, it was found necessary to prepare their own texts in order to tie the studies to the business of cotton manufacturing and to problems frequently presented to the operating executive in his daily work. The experiment, if it may be so designated, was extremely successful in this instance.

Therefore, in presenting in this number the foreword and a summary of the material to be covered, COTTON opens up the way for a series of articles on this important subject by the authors who were so successful in the original undertaking. This series will follow from month to month until completed. While each article is complete in itself, the whole series is designed to go together, and more interest and benefit will follow if informal discussion groups are formed as in the case of the series on "Human Relationships in Industry" presented in COTTON in 1924-25.

Furthermore, it has been suggested that possibly reprints of this series, in pamphlet form, might be desirable in many instances and in order to take care such a contingency the publishers of COTTON will hold the type metal on the present and succeeding articles until January 15th, 1927. After that date reprints will be made only on the current articles for such orders as may be on hand at the time of publication. Readers wishing to follow the suggestion further should communicate with the editorial department of COTTON.

What Do the Mills Need Most?

Just at this time, with the Southern Textile Exposition at Greenville only a few days ahead of us, the trend of thought and practice among the mill men of this section is interesting and valuable. In order to bring this thought to tangible expression the following question was sent to a number of the leading managers and superintendents:

"If you were asked to select some one feature that would, in your opinion, do more to improve the operation and production of mills in general than any other one thing, what would you choose?"

The answers received probably are fairly representative of the whole section, as they come from both large and small mills, are from several states, and cover a variety of products. No attempt has been made to segregate or classify these replies; they were appended as they came in and in most cases the name and position of the individual is given. These opinions follow:

W. P. Hazlewood, manager, Adelaide Mills, Anniston, Ala.:

"I am doubtful if the successful operation of a cotton mill depends on any one thing. Suggest as particularly essential taking operating managers into your confidence by furnishing them with accurate and complete cost figures periodically. Increased production and elimination of waste through purchase of suitable cotton and then have this cotton properly mixed. Reduced labor made possible by improved preparatory machinery and a long draft spinning process that is practical. Believe above everything else we should never sell at less than cost of replacement. Brains are just as necessary in merchandising as in manufacturing."

H. H. Holcombe, general manager, Strowd-Holcombe Cotton Mills, Inc., Birmingham, Ala.:

"The writer's opinion is that opening and picking has been neglected for years and believe this would be a subject for improvement in the majority of mills. However, there may be individual plants that have trouble elsewhere in the mill that would be more important than picking and opening, but believe that the suggestion would cover the majority of the mills in low production and quality of today."

George H. Hughes, superintendent, Borden Mills, Inc., Kingsport, Tenn.:

"A large number of details can successfully be improved in the equipment of a cotton mill, but my opinion in regard to the feature which will be of most value in improving operation and production is to have and keep an organization in which every executive has his heart in line with the administration as a person working with the mill and not for the mill."

Oscar D. Grimes, vice-president and general manager, The Athens Manufacturing Company, Athens, Ga.:

"Better trained operating executives will do more to enthuse the operation and production of our mills than any other one thing. I believe they will find a way to correct the troubles which can be corrected and which may exist in the mills providing they are given proper encouragement. With modern machinery and efficient management mills can operate at a very high point of efficiency from a production and quality standpoint. I do not think the adding of a machine or the changing of a process will materially change the final results in the production or operation of our mills."

Donald Comer, vice president, Avondale Mills, Birmingham, Ala.:

"Better cost finding records I think might help us along a lot."

W. P. Hamrick, general superintendent, Pacific Mills, Columbia, S. C.:

"I believe that long draft spinning would be the most important single thing I can think of at the present time for improving the operation and production of mills. I mean by this, of course, taking each separate item into consideration on its own value. While I do not know that long draft spinning would improve the production materially, from what I have learned, we get equally as good production and equally as good quality with a considerable saving in cost. This saving is not only made in the cost of labor, but in the floor space of the mill building and in the lessening of the number of operatives which reflects in another saving in village equipment and upkeep."

C. M. Powell, superintendent, Cabarrus Cotton Mills, Kannapolis, N. C.:

"Better and more opening machinery in the average mill will improve conditions more than any other one operation I can mention."

Frank S. Dennis, resident manager, Consolidated Textile Corporation, Lafayette, Ga.:

"Unstable market conditions have, for sometime been an obstacle to the cotton mills, and anything that could be done to relieve these conditions would be of great assistance in solving present day problems of operation and production. It is my opinion that most mills are today turning out a product of higher quality than at any previous time, and that their operating efficiencies are better than ever before. Many mills, however, due to the necessity of curtailing expenditures must deny themselves improvements in equipment that would make for better operating figures."

A Culberson, manager, C. R. Miller Manufacturing Company, Dallas, Tex.:

"Yours fourteenth. Results obtained from developments in improved opening and picking methods convince me that we have in the past neglected this very important department. Consequently, if more thought and study were given to opening and picking, much better manufacturing would result, as well as a great saving in raw material."

Union-Buffalo Mills Company, Union, S. C.:

"In our opinion complete cost finding methods and mill records will do more to improve the economical operation of mills in general than any other one thing. This conclusion is reached without full knowledge of the deficiencies of very many mills. However, it is based upon knowledge we have of some few other mills and upon our own experience."

H. P. Meikleham, agent, Massachusetts Cotton Mills, Lindale, Ga.:

"You ask for some feature that would in my opinion do more to improve the operation and production of mills in general than any ther one thing. As you say 'in general,' I am going to ignore 15 or 20 things that have to do with machinery, the system of machinery, the drafts, or the

speeds. I am convinced that what we need is a standard of excellence in our plants that is very high and that we must work to obtain and maintain this excellence. This means that the personnel of the officials should be the best we can get; that they should have pride in their work, and be given every assistance to do the best work. This also applies to the personnel of the employees."

A. Stanley Llewellyn, manager, Kendall Mills, Inc., Wateree Mills Division, Camden, S. C.:

"The one thing which would most improve the operation and production of cotton mills in general would be a strong, uniform good cotton. As the wheat is so shall be the flour. With good cotton all things can be worked out; good running work, spreading of labor, increase of speed, happiness and contentment among the help and a cleaner and healthier mill. The imaginary saving of poor cotton is lost in the increased overhead on finished goods per pound by the loss of production, without taking into consideration any of the other drawbacks."

J. D. Loner, superintendent, Dwight Manufacturing Co., Alabama City, Ala.:

"In a good running mill well operated, with a good production, I believe the answer to your question would be covered in the five following points: First, the careful selection of the proper staple of cotton suitable for the yarns to be made; second, using the largest mixing possible; third, give this cotton a proper cleaning with as little beating as possible; fourth, keep all machinery in good repair, properly set and operated at conservative speeds; and fifth, the elimination of surplus help. Of course there are hundreds of other things to be considered, which I believe in, such as weaver's knots, good slashing and other things too numerous to mention, but I would emphasize the first and second points as just given."

C. M. Black, superintendent, Borden Manufacturing Co., Goldsboro, N. C.:

"To improve the operation and production of the mills I believe that if more care be exercised in the staple, ageing and opening of the cotton, closely followed by light carding and proper humidity control that these things would do more to improve quality and increase production than anything I know. Then, too, all of us are in the dark in cost finding, and some accurate system should be found to determine our actual cost per pound of numbers spun."

R. W. Jennings, superintendent, Lanett Mills Division, West Point Manufacturing Co., West Point, Ga.:

"Replying to your letter of the 14th. My opinion is better carding. Taking for granted that the opening and picking is doing the work it should, the most important thing to be considered in improving the operation and production of a mill is better carding. The first thing to guard against is carding too heavy. This causes uneven work and improper cleaning, which, after it leaves the card, can never be corrected and shows up through the whole mill. Careless setting of a card, even if only a few out of an entire room, makes cloudy, uneven work and will cause bad running spinning and uneven yarn."

George P. Haslam, agent, Standard-Coosa-Thatcher Co., Piedmont, Ala.:

"In reply to yours of the 14th, will say, in considering our own conditions, that first we would give the utmost importance to better opening and ageing; next better carding; both of these go a long ways toward improving the product manufactured. Next I would name long draft on spinning, from which as good results can be obtained as from the shorter drafts and at a much less cost of operation by enabling the mill to make a heavier roving in the carding department. Also the matter of humidification and its control is one of vital importance, while at this time of keen competition complete cost finding methods are also of vital importance if one expects to stay in the business."

W. W. Arnold, Jr., agent, Brookside Mills, Knoxville, Tenn.:

"Disregarding the price of the raw material and the selling price of fabrics or yarn into which it is manufactured, I would say that the proper selection of cotton as to character, staple and grade would do most to improve operation and production of mills in general."

O. G. Murphy, superintendent, Shawmut Mill Division, West Point Manufacturing Co., West Point, Ga.:

"Considering the industry as a whole, the machines that prepare the cotton for the cards need more attention than any other group at the present time. This machinery, comparatively speaking, is very crude. The entire trade would be benefited in operation, production and quality by a finished lap that comes to the card clean, with fibers uninjured, without thick and thin places, with every yard of even and correct weight, making it possible to run the laps without loss. If these machines could advance in efficiency in the next few years as humidity control has in the past few years the trade would have one of its problems virtually solved."

George A. Franklin, general superintendent, Sibley Manufacturing Co., Enterprise Cotton Mills and Augusta Factory, Augusta, Ga.:

"In my opinion to select a grade of cotton suitable for the numbers being manufactured and then keep it uniform as to grade, staple and strength, would increase production, reduce cost and improve quality more than any other one thing in the average mill of today."

Wayland B. Pickard, agent, Indian Head Mills of Alabama, Cordova, Ala.:

"Thoughtful superintendents are now-a-days giving more study to every operation in the mill. My opinion is that a combination of things touching each operation, such as careful selection of cotton, improved picking, moderate speed carding and drawing, spinning frames to handle as large size bobbins as possible will give good running work and strong yarn. Also sufficient and well regulated humidification, and scientific slashing. The last two are very important. Furthermore, the machinery should be arranged to eliminate all unnecessary handling, as this will make for improved operation and increased production as well as lower costs."

T. W. Mullen, superintendent, Rosemary Manufacturing Co., Roanoke Rapids, N. C.:

"In my opinion, more attention to mixing, picking and preparation through the carding room would improve the the preparation and production of mills in general. If you do not thoroughly clean and prepare the cotton in the picking and carding departments you certainly cannot expect good results to follow in the spinning and weaving."

J. A. Baugh, Jr., agent, New England Southern Mills, LaGrange and Hogansville, Ga.:

"In general, mills are weak in preparatory processes. My opinion is that better and more intelligent application of picking would do more to improve operation, production

and quality of product than any other one feature."

H. O. Davidson, vice-president, Eagle & Phenix Mills, Columbus, Ga.

"The writer thinks the greatest improvement in cotton manufacturing that could be made is in the drawing processes. What is meant by this is all the drawing processes from the cards through the spinning frames. There should be some method whereby a number of these operations could be eliminated."

W. J. Britton, superintendent, Spartan Mills, Spartanburg, S. C.:

"In times of depression there are always offered panaceas warranted to cure, but commercial cash capital, which is an old reliable tonic, will tide the patient over his indisposition better than a course of these nostrums. I do not mean we should take no medicine. Neither do I mean that in the case of a chronic ailment that he should not send for a specialist. But I do mean that if we are feeling well we should not read the symptoms handed out by a quack doctor and then imagine we have some dreadful disease. Do not let this quack tell you you are old and fogy and out of date. Take your 'daily dozen' and tell him to go to hell."

Lewis H. Beck, president and general manager, Montala Manufacturing Co., Montgomery, Ala., and Autauga Cotton Mills, Prattville, Ala.:

"In my opinion, one outstanding process requiring more attention than the others in our southern mills is better preparation and conditioning of the raw stock. To meet competition it is necessary to install modern opening and cleaning machinery to better prepare the stock besides allowing the use of lower grades of cotton. This will result in better running work and a more constant and uniform mix."

J. H. Mayes, general manager, Fitzgerald Cotton Mills, Fitzgerald, Ga., Cochran Cotton Mills, Cochran, Ga., and Hawkinsville Cotton Mills, Hawkinsville, Ga.:

"It is true the manipulation of machinery goes a long way in manufacturing, but as a whole, manufacturers in the South keep their machinery in as good operating condition as manufacturers from any other section. As the writer sees it, the greatest drawback is due to conditions beyond our control where even the average mill is compelled to manufacture yarn or fabrics out of the range of their organization. A mill balanced on 10s is not properly equipped to make 20s, and a mill balanced on 20s is not properly equipped for 30s. Manufacturing out of the organization range naturally increases cost, makes inferior fabrics and gives trouble in general. We are in hopes that the Cotton-Textile Institute will function to such an extent that we will be kept posted as to the condition of the market on all lines of fabrics to the point where the market will not be congested on any certain construction, thereby often compelling mills to book business not suited for their organizations."

James A. Bangle, superintendent, Proximity Manufacturing Co., Greensboro, N. C.

"Better opening and cleaning."

The Russell Manufacturing Co., Alexander City, Ala.:

"At the present time our suggestion would be better humidification control."

M. W. Darby, general manager, Cherry Cotton Mills, Florence, Ala.:

"Other things being equal, am inclined to think more cards and better carded cotton is very likely the most important thing to be done to improve the operation and production of our cotton mills. Light weight card sliver with cotton well carded is the foundation for a perfect running mill."

Forrest B. Gardner, manager, Monticello Cotton Mills, Co., Monticello, Arkansas:

"The most vital need of the southern textile industry today is the universal establishment of merchandising policies designed and operated in accordance with the principles of sound business practice. This accomplishment necessitates on the part of mill managements a thorough knowledge of accurate textile costs together with a full cognizance of those basic economic factors whose constant operations so vitally affect all business activities.

Willis E. Johnson, general manager, Consolidated Textile Corporation, Lynchburg, Virginia:

"Careful attention to machine settings throughout the mill would improve the quality, by seeing that each machine is set up correctly and having some regular method of checking that will assure this. The superintendent should know that all settings in each machine are correct and kept correct."

Frank K. Petrea, superintendent, Swift Manufacturing Company, Columbus, Georgia:

"Better carding is the one thing that would do more to improve the operation and production of the mills in general than anything else. Better carding means that the cards must be allowed to do only that which they were designed to do, and not try to run more stock through per hour than can be properly carded. Also, the cards must be kept up by a regular system of grinding, setting and stripping."

L. L. Brown, general superintendent, Clifton Manufacturing Company, Clifton, S. C.:

"Your question is a hard one to answer. I would say that with low-grade cotton it is very necessary that the average mill increase its opening and cleaning machinery. You can't make good concrete with dirty sand and stone, neither can you make good cloth with trashy yarn. As the cotton belt moves westward, the crop as a whole is being lowered in grade. I unhesitatingly recommend improved opening and cleaning equipment."

John F. Scott, general superintendent, Henrietta Mills, Caroleen and Henrietta, N. C., and Cherokee Falls, S. C.:

"My opinion is that a general improvement in all of the departments is desirable. However, answering your questions specifically, under conditions existing at the present time generally in the mills, it is my opinion that it would be better to start in the opening and picking, which is the beginning of the manipulation of the cotton, and, together with carding, is the foundation of manufacturing cloth. It would be advisable to improve first on the opening, picking and cleaning.

George W. Murphy, superintendent, Columbus Manufacturing Company, Columbus, Georgia:

"Holding the cotton fiber and thrashing out the mote and leaf is crude. Careful opening and picking prevents broken and bruised fibers and is the foundation to even yarns, more production and an improved quality. Proper opening and picking will result in more profits than any other process in the manufacture of textiles."

J. G. Coman, superintendent, Mexia Textile Mills,

Mexia, Texas, and president of the Texas Textile Association:

"In my opinion, better opening, mixing and cleaning of cotton will do more to improve the production and operation in most mills than any other one thing. Every operation in the mill depends to a large extent upon a correct start, and an even running mix, well cleaned, gives this start."

L. W. Clark, general manager, Carolina Cotton & Woolen Mills Company, Spray, North Carolina:

"I feel that the greater attention being given to opening and cleaning cotton must materially improve the older mills, and that the simplified systems of drawing, and long draft roving and spinning are bound to benefit, though these would make better showings in new mills than in old plants. The application of higher speed and more automatic principles to looms is bound to help. However, the one thing which to my mind would do more to meet the specifications of your inquiry is the selection and training of our operatives to secure greater production per man without lowering the quality of our product."

J. E. Harris, agent, Tallassee Mills, Tallassee, Alabama:

"In my opinion, probably the one most important process in securing improved operation the year around is that of obtaining proper opening. All subsequent processes can be improved by well designed and operated opening equipment. The development of this process has perhaps been the most important one in recent years."

Claude R. Brown, superintendent, American Textile Company, Ateo, Georgia:

"My opinion is that the best thing for mills generally would be better opening by the use of balloon type horizontal openers, doing away with part or all of our present type of pickers. There has been practically no improvement in this process in fifty years. Another big help would be doing away with all traditions that certain things should be done and that other things cannot be done."

George P. Stone, superintendent, Revolution Cotton Mills, Greensboro, North Carolina:

"I feel quite sure the thing most needed in our southern mills to improve the quality of our products is *more carding and better carding.*"

Seventh Southern Textile Exposition

It is general knowledge among the textile industry now that the Seventh Southern Textile Exposition will be held at Textile Hall, Greenville, South Carolina, during the week of November 1st to 6th.

Now-a-days, among mill men separating after conventions, and with salesmen leaving mill offices, the departing word is, "Well, see you in Greenville at the Show, of course!"

And the combined effect of a particularly genuine interest on the part of the mill men, and an exhibition which bids fair to be of surpassing interest and value, is going to justify a prediction of a successful, profitable and enjoyable week.

The attendance, it is expected, will be unusually good. Those in a position to diagnose thought in cotton manufacture report within the past year an exceptionally keen interest on the part of mill men generally in things progressive. The trend of this interest follows especially along the lines of improved manufacturing equipment and processes—and an unprecedented attendance of financial and operating executives of open and inquiring mind is anticipated.

There will, of course, be the usual custom of attendance; that is, a number of the seasoned campaigners among the mill men will come early and stay late, putting in the entire week, and then not see it all. Others will come in for a one-day tour through the booths, but the more general practice to be pursued perhaps will be that of relaying the men on different days during the week, sending some of the operating executives during the first part of the week and the others later on, when the first contingent returns to look after things at the mill.

By whatever method of attendance, an overflow crowd is anticipated—an attendance which is going to be of a character that will learn from the exhibits, and which will make the show profitable for the exhibitors.

Without detailed description, nothing specific as to the explicit types of exhibits can be given. However, an entirely safe prediction is that those exhibiting have also caught the urge for improvement and will show products that will make close examination well worth-while.

A study of the advance list of exhibitors who will display their wares reveals a scope of products so extensive as to enlarge upon the variety of even the Sixth Exposition held in 1924.

Beyond hinting the rumor, nothing further can be said in advance, but it can also be declared that a number of exhibitors are going to exhibit for the first time some things that will be of exceptional present-day interest.

All of the major machinery people, practically, will be back into the Greenville show again next month—and in addition to the regular supply and equipment manufacturers and distributors, the past two years have seen the advent of a number of new concerns into the field, who will be on hand for the first time at this show.

Greenville's hospitality is a axiomatic. The capacious Poinsett Hotel has been opened since the 1924 show, and additions have been made to other leading hostelries. Furthermore, the plan of allotting delegates and visitors into private homes for the week will be pursued again this year. This is a popular feature for a number of the "regulars," many of whom specifically request to be placed in the same homes whose hospitality they have enjoyed upon previous occasions of this kind.

The show management will, as usual, excell its previous accomplishments in the way of arrangement of detail, decoration, and attention. During the week, according to plans. musical programs will be given morning, afternoon and evening on the second floor of the building.

Up to the time of this writing, no detailed information as to the general entertainment program for the week has been received. However, as usual the courtesies of the country clubs and excellent golf courses will be extended to the visitors, and, it is understood a regular program of after-show entertainment is being planned.

A committee consisting of Austin Parker, chairman, Earle Stall, W. H. Hudgens, D. B. Miller, and Walter W. Gayle, will arrange for a club room for the presidents, superintendents, office men, overseers and others who will visit the exposition during the week. This club room will be one of the attractive features of the show, and will be utilized as the men's smoking and lounging room. It will

be equipped with desks, tables, comfortable chairs, magazines, newspapers and telephones. Daily market reports will be shown. Visiting executives, superintendents, overseers, section men, office associates and all others having direction of the affairs of any kind of manufacturing or other industrial plants will be welcome, it is announced by the committee.

The Southern Textile Association and The Arkwrights, Inc., will maintain headquarters throughout the week in this club room, it is stated, and members of these organizations are invited to make this room their headquarters during the week. J. M. Gregg, secretary-treasurer of these organizations, will have a desk there throughout the week.

The semi-annual meeting of the Southern Textile Association is scheduled to be held during show week, and officials state that this convention will be held on Friday, November 5th. Only one session will be held, on Friday morning, instead of the usual two-day meeting. This change was made because of the fact that the show will claim the attention of most of the men, particularly those who will come only for the last two days of the week.

Definite program plans have not been announced. However, it is understood that the theme of the Friday session will be the need and advantages of better equipment for mills, and that several experts will discuss this matter.

At the conclusion of the session Friday morning, which will be held at the Poinsett Hotel, the Association luncheon will be held in the main dining room of the hotel. For the information and relief of those who were at that Tybee banquet (?), it is hastily added that the meal and entertainment of this occasion will be handled by the Greenville committee in typical Greenville style, so that no fear need be had of a repetition of that affair.

Reverting in conclusion to the show itself, it's going to be a history-making affair in forming contacts and furthering the appreciation of the need for better and improved equipment. The mill men are going there, some with particular things to see, and others with a general interest in everything—and the exhibitors are not going to disappoint them.

Factors in Textile Mill Lighting

BY D. J. FINN

ILLUMINATING ENGINEER, EDISON LAMP WORKS.

Not so long ago the buyer of textile goods seemed to be somewhat antagonistic towards all fabrics other than those manufactured in New England. This sentiment was not without foundation either, for there was quite a difference in the quality. Many changes have been wrought with the oncoming of the development of the hydro recourse of the South, so that the term "The New South" can be said to apply equally as well to the mill situation of the Southeast today as it does to the general industrial progress of the territory below the Mason and Dixon line.

One often stops to wonder how this miraculous change has come about and why this sudden recognition of quality. This recognition of quality has been made possible as the result of the standardization of the cotton mill itself, along with its machinery arrangement. Very little, if any, attention has been given to the possibilities that would result if these same considerations were given to standardizing the lighting. It is by means of this agency—lighting—that the cotton mills in the South are going to be able to still further excel their competitors. It is only natural to see why the southern mill up to date has confined its problem to erecting mills, purchasing machinery, and placing this properly inside of the plant. The eastern competitor already having the mills and machinery naturally looked about for means and ways of increasing their operating efficiency. This they realized could only be done by means of proper and better lighting. Now that the South is rapidly reaching that stage where they do have mills and the proper machinery arrangement, the next item that will be given even still more serious consideration is that of its illumination. Certainly the commercial lighting man must be in a position to render these clients this service, help them to improve their operating efficiency and thereby bring still greater prosperity to the entire section.

When the problem dealing with the lighting of the cotton mill comes up what is to be our solution? What are the factors which enter into every cotton mill lighting job and make it possible for the owner to demand better lighting? They are few in number but so all important. Mistakes made in the lighting of the plant will bring about extreme hardships not only for the employer but also the employees and at the same time decrease the margin of profit for the management. In order that no mistake will be made, let us remember the most important factors to consider are the quantity, and quality of the light itself. As we proceed we will see how these two factors involve many others.

When we speak of "quantity" we refer to the intensity or the amount of illumination that is necessary to bring about the least loss of time and which will also be conducive to producing the best quality of work. The amount of light required will of course vary according to the operation that is being performed. In those areas devoted to opening, picking, carding, we should recommend an intensity of from between 3½ to 5½ foot candles, 3½ being the minimum and 5½ being the maximum. In the room for drawing, combers, speeders, and slubbers, an intensity of 4 to 7 foot candles should be found. In the areas utilized for spinning, twisting, warping, beaming and quilling, the intensities found most suited range from 5 to 8 foot candles and likewise in the weaving, inspecting and finishing room, intensities are from 5 to 8 foot candles. These intensities apply to the lighter colored goods and for finer or darker materials higher intensities would be necessary. In some of the larger New England factories the intensities go up to around 15 and 20 foot candles.

The term quality means: 1. Absence of glare due to brilliant light source or reflection from polished surfaces. 2. Diffusion and an elimination of sharp shadows. 3. The direction from which the light comes must be correct. 4. The color qualities of the light must be corrected.

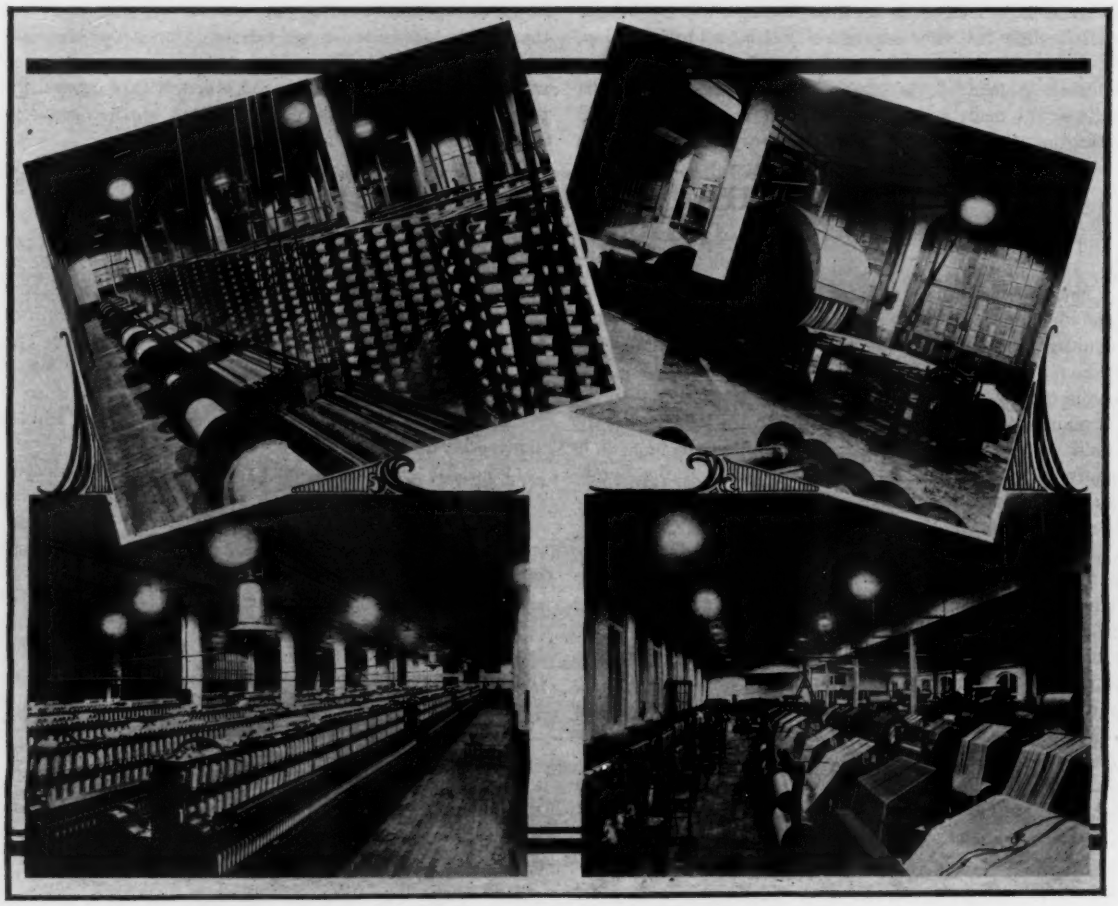
Taking up those factors which have a bearing on the quality of illumination we find that one of the items which tells whether the lighting of a cotton mill is good, bad or indifferent is an absence of glare.

When glaring light sources are evident we encounter that bugaboo of all large mills, viz., the accident hazard. While accidents can be attributed to lighting of this nature, it is even still more harmful on the employee's eyes. It tends to bring about a weakening of the eye and nat-

urally increases the number of eye glass wearers in our country. This means that just about the time the employee has reached the point of maximum output and is serving as a well trained operator his eyes go back and naturally the plant owner loses an experienced employee.

The use of bare lamps is the outgrowth of a habit found in days gone by. The first lamps made naturally were not as intrinsically bright as the newer and more powerful light sources of today. The carbon lamp as contrasted with the efficient type C lamp brings out this point conclusively. So many workmen have the idea since they have worked for years and years with the carbon lamp close to their eyes, that the newer illuminant can be used boring in revolving gears which are only too anxious to catch the clothing and thereby lacerate the body. Shadows in themselves are not objectionable. The fact of the matter is, shadows are quite often necessary in order to see the material in the proper perspective. It is necessary though for the shadow to have a sufficient quantity of lighting in it. The shadows that should be done away with are the harsh dense ones and not the soft feathery ones which are really more ideal.

Shadows can be eliminated to a great extent by the proper finish of lamp. The light coming from a clear lamp is in no way diffused but with the new inside frosted lamp and bowl enamel lamp for sizes above 100 watts the



A Group of Well Lighted Interiors from Three Southern Mills.

in the same way. It would be to the advantage of all concerned to entirely do away with such customs and raise the light source considerably out of the line of view. Even with the light source raised considerably above the working plane it is necessary to use some form of diffusing medium between the bright light source and the eye itself. This brings us to the second factor entering into the quality of the light; viz., diffusion and elimination of shadows.

Shadows are one of our main causes of accidents. The workman coming along an aisle fails to see articles in the path, stumbles, falls, and possibly injuries himself, so that he is a loss to the employer as well as a loss to himself. In the cotton mill we are not so likely to find large obstacles in the way of travel as we are to have them harlight that reaches the working plane has to pass through the translucent material which is placed on the outside of the bulb and in that way it is softened and smoothed out, all of which tends to produce a less harsh shadow. It might also be well to state that the shadows cast from a large source of light are much softer and more luminous than those from a small source. Hence, we can see the fallacy of the policy of thinking a large number of small clear lamps are going to eliminate shadows as contrasted with the use of one large properly finished lamp. It should also be borne in mind that the larger Mazda lamps are more efficient; i.e., they give a larger lumen output for unit of energy or wattage consumed. On the other hand, shadows are sometimes minimized by the proper

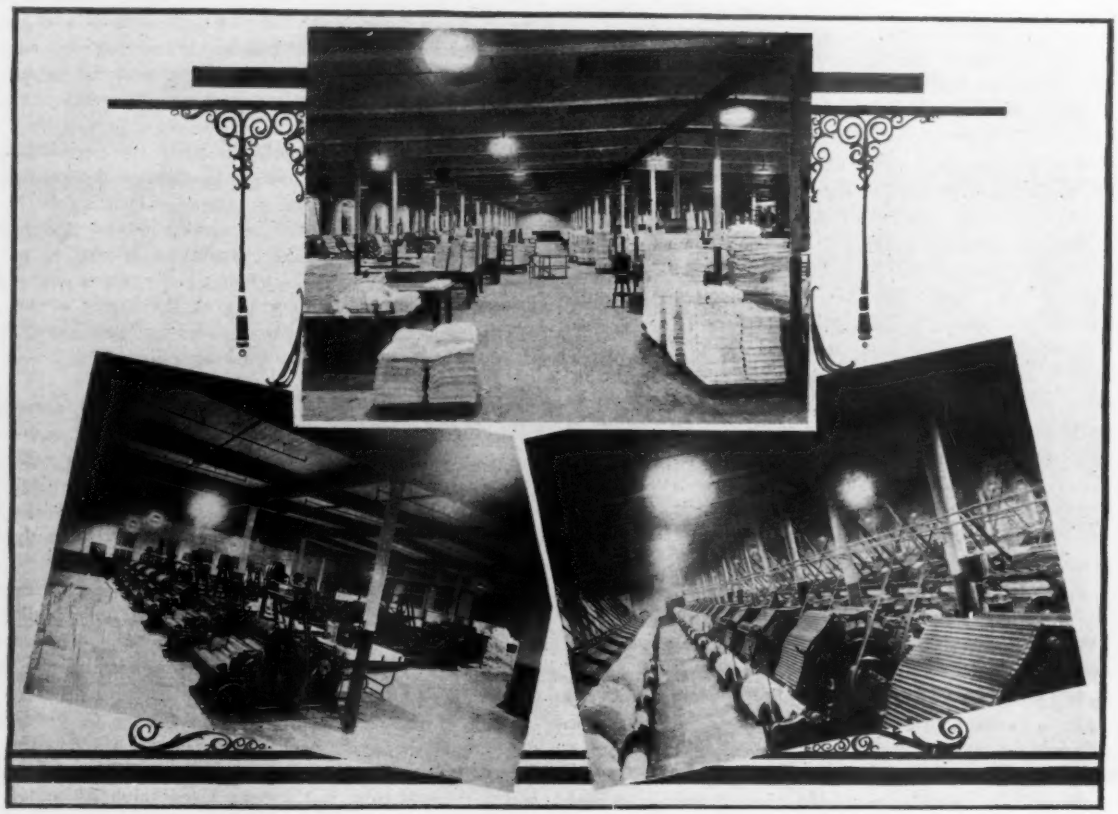
use of several small lamps in place of fewer larger ones. A proper balance of these factors applicable to textile mill illumination points to the use of Mazda lamps of 100, 150 and 200 watt sizes with an average spacing of from 10 to 16 feet.

Another way in which the cotton manufacturer can be rendered a service in the way of elimination of shadows is by recommending the use of a liberal amount of high quality paint. A clean white paint or one of an eggshell finish is ideal from all standpoints. One with a glossy or sheen surface should not be employed as it usually results in some specular reflections from the side walls themselves. Besides livening up the appearance of the whole room, a white cheerful paint also helps out in the lighting to a great extent. Light colored paint will reflect approximately 80 per cent of the light which falls upon it, whereas when we come down into the light green and darker colors approximately 40 per cent is absorbed.

Besides helping to eliminate shadows the properly painted interior also tends to produce a more cheerful atmosphere and in that way raises the morale of the employees themselves. Sanitary conditions are also improved for light corners are not so apt to accumulate dust and refuse. Naturally when the employees are in a cheerful mood they are more apt to work at a higher rate of speed and do so with less grumbling and dissatisfaction. This in itself is one of the reasons why the cheerful factory can point to a larger output than the one where the laborer has to toil under more dismal and unsatisfactory conditions.

The next factor which goes to make up the quality of light is the direction from which the light comes. In most operations that are found in the industrial world, the working plane is usually considered on the horizontal. In the cotton mill though we have somewhat different conditions existing, for while it is true that a large amount of the work is done on the horizontal plane we do have circumstances where the vertical illumination must also be good such as in the spinning, twisting and drawing processes. Because of this existing condition the unit selected must meet both requirements. In most cases the use of the RLM standard dome reflector with the bowl white lamp will meet the most stringent conditions. Incidentally it might be mentioned that the name RLM stands for Reflector Lamp Manufacturer. When the new type C lamp came out there was no reflector on the market to take care of it so at the instigation of the lamp manufacturers and reflector people a meeting was called and this reflector was the outgrowth of this particular meeting. The reflector was designed with a porcelain enamel finish which gives a good reflecting quality and one which was also easily cleaned. The angle of cut off was made about 16½ degrees which allowed a 4 degree leeway as the eye in an open area will normally sustend an angle of about 13½ degrees. Thus we see that in most instances this particular reflector will meet the requirements of both a horizontal and vertical type of illumination. Many plants have failed to take cognizance to the fact that the newer lamp cannot utilize the old form of reflector.

By locating the units in most of the areas with a spacing of not over one and one half times the mounting height;



Representative Examples of Proper Illumination from Another Group of Three Southern Mills.

i.e., the distance between the working plane and the point of suspension, we will obtain a fairly uniform illumination or what is usually called a general system of lighting. This is the type of lighting usually employed in industries today. Not all the conditions in the textile mill, however, will be suited by this form of lighting and in order to meet the other requirements some slight variation has to be made and use is made of localized general lighting or group lighting. In other words, the unit is placed or arranged according to the location of the machines rather than according to the bays in a building.

The other factor which enters into the qualification of quality is that of color. We all realize of course that the best kind of color would be pure north skylight. This being the color of light which the human eye can best judge by and make a good color discrimination. Where just a mere approximation to daylight is desired, the daylight or blue lamp can be used. It should be borne in mind, however, that wherever this form of illuminant is employed the wattage will have to be increased approximately 33 1/3 per cent. This is due to the fact that the color of the glass in the bulb absorbs such a large percentage of the light output, a large quantity of the red and orange rays being absorbed by it.

Where the cotton grading is done or very close color matching is desired the daylight lamp will not meet the requirements. Here some form of color matching unit must be employed. In fact, in most of the larger cotton mills where very close color work has to be done use is made of extensive daylight matching machines which bring about the desired effects.

Of course now that we have taken up and in a rather hasty way discussed those factors which bring about the correct quantity and proper quality of illumination, I think it would be in order to say something about the cause itself without which there would be neither quantity nor quality.

It is quite an important matter to remember that the lamp should be mounted not less than 20 degrees above the floor where the filament of the lamp will be exposed to view. Where a lower hanging height is required the bowl enamel lamp should be used with the proper reflector.

In a cotton mill one quite often is confronted with the problems of poor voltage regulation. The power for many mills is transmitted over long distances and comes to the mill only roughly regulated, the mill being required to install the proper regulating devices for lighting purposes. Quite often we have a variation from 10 per cent above to 10 per cent below. This tends to decrease the life of the lamp and its efficiency. Continued fluctuations in voltage tend to break down the filament. It should always be seen to that the proper voltage lamp is used.

Another problem often found in the lighting of a cotton mill is that no provision has been made for future expansion. Too small a capacity wire has been used and naturally the lamps at the end of the line have such a drop in voltage that they do not give off the amount of light intended. This condition should be altered and a suggestion along this line is to make the main feed wire of a much larger diameter and have the individual lighting circuit tapped off of this.

It might also be well to mention that it is better to use lamps in a 100 volt range rather than 200. The 220 volts are usually operated on the power circuits. Every time a motor is started or some load is thrown on the line we have a variation in line voltage. Not only this but the lamps in the 100 volt class are much stronger than those of the 220 volt type. Therefore, it will be a saving to the mill owner as well as a saving in trouble and money to use a lighting circuit separate and distinct from the power circuit. Another point in his favor is that in the event of the power going off and repairs have to be made on the machinery if the lighting load is on the same circuit it means that when the lights are needed most they have to be off because they are on the same circuit.

In the cotton mill, due to the many machines and the constant vibration, the construction of the lamp has to be very rugged. Even with the lamp made as rugged as it sometimes is it fails due to excessive vibration and shocks. There are on the market today several devices which take care of these shocks and tend to lengthen the life of the entire lighting system. The lamps when they are connected as they are now on rigid conduit work are subject to these vibrations and also to non-swing. These are points to be borne in mind.

We all realize that unless the units are periodically cleaned there will be a decrease in the light on the working plane. It is suggested that a system of cleaning be inaugurated and that the units be washed instead of wiped out. In no case should the cleaning be allowed to run over a period of two weeks without being wiped out and then on every third or fourth week thoroughly washed. This is in the interest of better lighting and economy. As the old saying goes—"Water is cheaper than watts."

Recent additions to the line of direct dyes manufactured by the National Aniline & Chemical Company, Inc., include National Solantine Yellow 4 GL, a pure greenish yellow shade. Its greatest application is on cotton, rayon, and pure and tin-weighted silks, although it also possesses strong affinity for wool. Its makers advise that it dyes level and may be used in combination with other direct dyes; with National Solantine Blue 4 GL, brilliant greens of excellent fastness to light are obtained. Its adaptability for use in combination shades and its excellent dischargeability with hydrosulphite highly recommends this dye to the printing trade.

Then there is National Solantine Orange G, yielding pure orange shades characterized by fastness to light, washing, perspiration, chlorine, organic acids, alkali, rubbing and hot pressing, it is claimed. Good solubility and inertness to metals make both of these dyes well suited for use in all types of machines, it is pointed out, and they are particularly adapted for the dyeing of piece-goods in the jigger.

Among the recent color cards issued by the Newport Chemical Works, Inc., Passaic, N. J., and arranged for binding in their standard folder, may be mentioned the following: Newport Chrome Orange G G, suitable for use in the production of tan and brown shades and also as a shading color; Anthrene Brown B B Paste for drab and dark brown shades where fastness to chlorine is not an essential; Anthrene Violet R N Paste for dyeing light and medium shades, especially on cotton and rayon; and Anthrene Red Violet R R N Paste for the dyeing of cotton, rayon and silk in all forms, and claimed to be particularly valuable for the production of fast shades on dress goods, shirtings, ginghams, bed spreads, etc.

Practical Industrial Economics

BY LUTHER H. HODGES, EDUCATIONAL DIRECTOR, AND HARRIET L. HERRING, PERSONNEL MANAGER

THE CAROLINA COTTON AND WOOLEN MILLS COMPANY.

A Foreword.

The series of articles on economics which COTTON purposes to publish was prepared to meet needs in a specific situation which the writers of the series and the editor of COTTON believe can be duplicated in many places in the textile industry in the South among individuals and among groups.

Economics and the Recent Behavior of Business.

In the first place the ups and downs of business, and particularly the textile business, for the past few years have been so sharp and so distressing that even the most ignorant or the most thoughtless has had it impressed upon him that such changes for his company can hardly be the result of the whims of the man in the front office or even of some sort of mythical New York superman who sits in an office on Wall Street or Worth Street. The spectacular changes in business have challenged the attention of every operating executive to understand the powerful forces and inexorable laws which can so play havoc with his plans and his very life. Not indeed that he can do much about those laws and forces except as an intelligent public opinion is the most formidable foe of those blind forces that work best among blind people. Not indeed that he can even foresee what will happen clearly enough or far enough ahead to do him a great deal of practical good —that is a job for experts. But a general understanding of the underlying problems of business and economic life can help him to trim his sails in response to the warnings of those experts; can help him to explain some of these changes to the people working under him. It will add to the interest of affairs as it opens up to his eyes the interplay of facts and forces which he never saw before. It will show him his business and his work as a part of a most marvelous structure that man has painfully erected through the centuries—the economic system of modern society.

Economics and Educational Programs

In the second place the educational programs of individuals, of companies and the vocational education programs even of the states have a gap which it is hoped this material fills, which it has filled in one case at least. Mill men all over the South take correspondence courses in the problems connected with their jobs of today or tomorrow; company and state programs include classes in reading and writing, or mill calculations, or loom fixing, but there has been nothing to help the man orient himself in the entire business, or to bring him up to the point in business information that he has reached in his technical and general education.

To fill this gap in its own program the educational department of one company set about finding material for a discussion in business fundamentals. The search was a vain one. Textbooks that were elementary enough to suit foremen who may not have had much formal education were written for immature young people; books for minds as mature as theirs wandered too long into the byways of history or got entangled in the hedges of theory. A college, called upon for aid, sent a bundle of student term papers. Commercial "lessons" and correspondence "courses" appealing to a wide and general market failed to relate the problems discussed to the workaday life of a foreman or second hand in a cotton mill in North Carolina.

What the Writers Assumed.

Members of the organization, therefore, set about supplying the material themselves in a shape that would more precisely fill the need. While they realized that the problems to be discussed are stupendous they believed there was nothing mysterious about the setting forth of some of them in plain language; that while a full comprehension of any one of them would elude a lifetime of study, a working familiarity with them was easily within the grasp of men who had the native ability to work themselves up in industry. They found their hopes amply justified: that the experience of the mill foreman or lesser executives has been such that a brief statement of the history of a problem or the principles involved brings up so much that has fallen under his own observation that he proceeds with ease from the known to the unknown, or even to a simple gathering together of knowledge he already had. Thus was the bugaboo of economics routed.

The series of lessons and this series of articles growing out of it do not attempt to cover all the subjects of importance in a study of business fundamentals or economics. Perhaps all will not agree with the choice. But all will admit that those included are important and have daily bearing upon the southern textile mill and the southern textile man. It could hardly hope to cover all subjects which this description fitted.

Summary of Material Covered.

The first article seeks to make plain the reason for the recent popular interest in economic principles and to give a working definition of economics and something of its impartial and its social spirit. The next two articles take up in review the ways in which the work of the world used to be done in order that we may the better understand some of the problems of the present that have been handed down to us from former conditions in comparison with those of our more recent industrial revolution. The textile industry figures largely in this story.

The fourth article will explain our dependence on the elementary gifts of nature and the relation of population and over-population to the natural resources and raw materials. This is logically followed by a discussion of manufacturing, large scale production and its accompanying specialization and increased production, and some of the advantages and evils of the machine age. A more specific discussion then takes up the story of manufacturing in the South—how and why we have become an industrial section and some of the problems that industry has brought us.

Article seven will take up present day forms of business enterprise—proprietorship, partnership, and corporation with the special manifestations of the last—the trust and the combination and their financial tools, the stock and bond. Just as this article seeks to make clear all

through that it is the individual enterpriser who is the force in this corporate form, so the central idea of the next paper is not only to explain what capital is and does but to distinguish between capital as a force and capitalism as a system.

The two articles on labor seek first to explain some of the factors that make for efficiency and for waste in human effort and secondly to discuss some of the pressing problems of labor that face the nation and the South.

The remainder of the series will take up very concrete questions: *wages*, how determined, family wage, wages and labor cost, reasons for difference in wages; *rents and profits*—a popularly misunderstood subject—monopoly profits and why they break down, how society builds up or destroys fortunes; *railroad transportation*, how we built the railroads in this country, the principles upon which they work in setting rates, regulation; *marketing* and the spread between the cost of production and the final selling price, the service and disservice of the middleman, futures and hedging; *money*, what it is and why governments cannot issue any amount of it, paper money, price and the making of index numbers; *business cycles* or depressions and their causes, pendulum-like movement, prediction and suggested remedies for such crises; *taxes, tariffs* and the principles involved in the shifting of tax burdens by the payer of the tax; *government regulation* and the modern tendency toward government cooperation.

The series closes with a final article on economics and social progress with an appreciation, a query and a challenge for better knowledge and more broadmindedness concerning the economic and social problems of our day and section.

Sources of Material.

Naturally the writers of these articles did not have much of this information as first hand knowledge—most of it is history that society has been long in making and formulating. They have therefore taken freely wherever they could find it—books, magazines, news items, "courses," etc. If they have not in the discussions always given credit for thoughts not original it is because to do so at every point would have so befuddled the material with footnotes and references and citations that it would have distracted attention too much—particularly of minds not used to these academic impedimenta.

They have leaned heavily upon the following: Marshall and Lyon, *Our Economic Organization;* Clay, *Economics for the General Reader;* Seager, *Principles of Economics;* Burch and Nearing, *Economics;* Roberts, *Economics for Executives;* Fetter, *Economics;* two sets of books by the Business Training Corporation on *Business Essentials* and *Business Training;* Mitchell, *Rise of the Cotton Mills in the South;* White, *Market Analysis;* Edie, *Stabilization of Industry;* Laing, *Introduction to Economics;* Ross L. Finney, *Causes and Cures of Social Unrest;* Tawney, *The Aquisitive Society;* Rorty, *Current Economic Problems;* magazines such as *Nations Business,* COTTON, *Textile World,* and the *Southern Textile Bulletin.*

Series versus Separate Articles.

Although each article is complete in itself the whole series is designed to go together, and more interest and benefit will follow this use. Indeed readers will probably find that their interest and benefit will be greater if associates who read them can discuss them, or even form an informal discussion group. With this in view the writers have added to each article a few questions worthy of thought and discussion growing out of the reader's own experience. As was pointed out in connection with a description of the original use, it was found that the varied observations, opinions and knowledge of each different man served to illuminate the subjects and it did each one good to have to defend his position. We are all a part of the economic order whether we wish it or not, and whether we are intelligent upon it or not. The more intelligent we all are the more valuable citizens and members of the industry we are. And in no group is such intelligence so valuable as among the men to whom these articles are addressed—the executives, foremen and supervisors in southern industry, because they teach and influence thousands of workers and must try to interpret for them many things that go on in the economic work of which they are all a vital part.

Extra Wide Cotton-Felt Looms

Robert Hall & Sons, (Bury) Ltd., of Bury, England, manufacturers of looms for weaving technical cloths of various kinds, include in their list of products wide cotton-felt looms for the manufacture of paper maker's felts. These looms, it is claimed, embody the points found desirable for the weaving of these special cloths. The looms being principally made at the present time are from 19 foot to 25 foot reed space, though wider looms are made. All the parts are rigidly built so that a high speed can be obtained. The crank shaft, of large diameter to obtain the necessary strength and stiffness, is fitted with extra heavy fly wheels at either end and provided with intermediate stays at short intervals to take the thrust of the beat up. The shedding is by means of outside whole plate tappets of large diameter connected to the healds by means of multiple jacks, as many as six sets or even more being employed, according to the width of the loom. The tappet itself is arranged so that it can be moved out of gear for gaiting and other purposes. The picking motion is a development of the well known side lever pick, of massive character in keeping with the rest of the loom. A take-up motion with powerful worm and wheel gearing at both ends is provided. The driving is through a countershaft of either fast and loose or friction pulleys as desired, and a slip wheel is provided to relieve the shock when the frogs come into action. The loom is capable of high speed, up to 48 picks per minute being obtained in 25 foot reed space. The weight of a 25 foot reed space loom is more than 20 tons.

In addition to the type described, the makers have other patterns of different construction up to 40 foot reed space for cotton, linen and woolen cloths. They also construct winding, beaming and other accessory machinery to be used in conjunction with these looms.

The exhibit of the Universal Winding Company at the Greenville show will be devoted principally to the system of high speed warping which is attracting so much attention among mill men and which is likely to supercede to a great extent warping from spools. As the new system of warping is particularly applicable for use in southern cotton mills this exhibition will enable the practical mill man to gather information regarding its value from a practical standpoint.

Scientific Trends with a Textile Slant

This year the great placid city of Brotherly Love, Butler and Bigo—old institutions—is witnessing the invasion of itself by motley crowds intent, at once, on viewing the spectacle of an historical celebration and, at the same time, giving vent to their vacation enthusiasms. So much of an expenditure of the vacation spirit is so unusual in a region unprepared for it in either habit or training that the result is a curious mixture cheapening the face of things, defeating the spirit of the event, yet providing a quality of mobility and versatility hitherto unawakened.

There is a deep-seated inherent quality in all of us that makes us look critically upon the new, the untried, the unusual, and the stranger. Those who delve into ancient causes say that we can not help this, that it is a relic of the timid, tribal instinct which regarded with fear, suspicion and distrust any other than the familiar activities of the well-known group.

Whatever the origin it is so universal a trait, in its various degrees of registration, that we are likely to lose sight of the reaction it might have upon our fortunes and our opportunities. For these INVASIONS of our settled routine, in any form are more than disturbing—they are in that class of things, like opportunity, which must be dealt with or their benefits will pass us by, their black magical power betray us.

Perhaps the invasions of most of our calms are not unmixed evils. We go along for years, content with tried and true methods because "they have worked." So has a house stood, unburned, without insurance. When fire comes the fact that it stood so many years free from fire is of no value whatsoever beside the value of a policy of fire insurance.

Now the important thing which the quality of Invasion does for us is that it presents a redraft of our ideas, a new *possibility* of viewpoint occurs to us, perhaps for the first time seriously.

The insurance value of invasions, of any kind, lies in the opportunity it affords us to develop ourselves *with the undeniable advantage of the man already located on the home ground, his natural and organization advantages.*

One outstanding point is constantly being raised in connection with the steady movement of textiles to the South. This is the question of whether the South will inherit the evils borne by the industry in the North or, on the other hand, whether the labor handicap of the northern industry will be balanced by the engineering and technical handicap of the southern. Whenever this issue is raised, in either section, it has been apparent that the main point has been lost sight of.

Possessing the advantages of location which the southern industry does, it need neither, necessarily, inherit the labor evils of its predecessor nor be handicapped by a late start in technical facilities.

At no time in the history of the entire textile industry in America has so much of the *spirit* upon which achievement in any industry depends been as manifest as within the Southern industry at the present time. This is of much more significance than age of institutions, financial support or learned advisors.

This is, in truth, capitalization of the advantage of location, in the face of Invasion.

The qualities of vision, inspiration and the ability to combine useful techniques into a composite successful result, coupled with a fundamentally deep love of the job in hand and its background, stack up very well in the balance against all other (and frequently antiquated) so-called "advantages."

But let us not, in the face of this our gain, be led aside by the temptation of self-satisfaction and cock-sureness.

The positive lesson of business advancement, in the technical sense, of the last generation, is the application to one's own special business of the discoveries which other lines of industry have contributed.

Now in the textile industry, and in cotton in particular, a thousand varied techniques of fiber, chemical ingenuity and process method await profitable application to the business of making cotton fabrics.

Two great outstanding factors have been developed so specially, and are adaptable to this our cotton that it will be little short of an economic crime if definite correlated steps are not taken, within the current year, to summarize and to apply their major lessons and achievements thereto

Style has been developed over a thousand fields and in a million detailed phases, yet, sadly, the proportion of cotton goods sold as the result of styling is tragic.

The United States of America is the outstanding nation of the world in ingenious machinery achievement. Yet, barring manufacturing details, the principles underlying some of the major (and in the sense of yardage, most extensive) operations of textiles have had no outstanding improvement in 100 years.

These things are sheer neglect: we have been too busy, apparently, to take time to get ready to make more money out of our heritage.

It will be apparent, then, that what started out to look, in our first sentence like an appeal to regional activity is, in reality, likely to be the guide-post pointing the way to the whole industry's salvation.

One factor is forcing itself increasingly upon our attention in the manifold divisions of the textile and subsidiary industries, these days, that of the necessity of an appreciation of one's true function and relation to the entire field. A surprising amount of competition is not only unnecessary, wasteful and foolish; it is based upon a mistaken premise and an entirely wrong conception, not only of the true basis of competition but of our proper fields of special endeavor, as well. This lack of understanding runs through the whole fabric, from the maker of cotton and rayon mixtures, crazily competing with certain outrageous classes of silks, to the manufacturer of an excellent machine specialty competing with a maker of tanks and boilers.

We see as plainly as if written upon tablets of stone and graven in the heart, that:

The basis of permanent success in any branch of the industry is a thorough economic study of the field of work and of general business conditions affecting it.

Invasions can be made either a menace or a stepping-stone, according as they are utilized.

The Carolina Mill Band Convention

BY ROBERT WALDEN PHILIP

A woodland dell in Saxon Mill village at Spartanburg provided a fitting setting for the fifth annual meeting of the Textile Bands Association, held on Saturday, September 18th. Concert bands representing a score of South Carolina mills foregathered there in convention, and provided a feast-day of music for several hundred members of the association and visitors. The sylvan setting echoed the cadences and crescendos of a bountiful program of concerts which constituted the meeting and which, to the qualifiedly expert ear, was worthy of professional organizations. It was easy for the audience to forget that the bands participating were recruited from the ranks of employees of cotton mills, whose mechanical whirr and clack is ordinarily not given association with music of the type we heard at Spartanburg.

Since the program was composed largely of band concerts, and since this reporter lays no claim to the higher art of music criticism, this report will not follow the usual lines of a story on an occasion of this kind. There are other reasons for its being written and published, and the Spartanburg band convention will be used as a basis and illustration, and, while reporting the meeting, it is hoped to present some general observations upon the concert band as a part of cotton mill village life and activity.

The mill band as a general proposition is conceded to be a valuable adjunct to the community, and receives practically universal support and assistance from mill managements wherever operated. Some five years ago, upon the basis of community of interests and the value of organized activity, the Textile Bands Association was formed, being composed of the mill bands in South Carolina cotton mills, and having now an active membership of over two-score organizations, representing some of the state's leading mills. Learning of its healthy growth and the results of its efforts in furthering interest in mill village music, COTTON arranged to report the Spartanburg convention by presenting photographs of the bands participating, and an outline of the program, in the thought of arousing a greater interest in this valuable phase of community activity among the operating and financial executives, as represented by its readers.

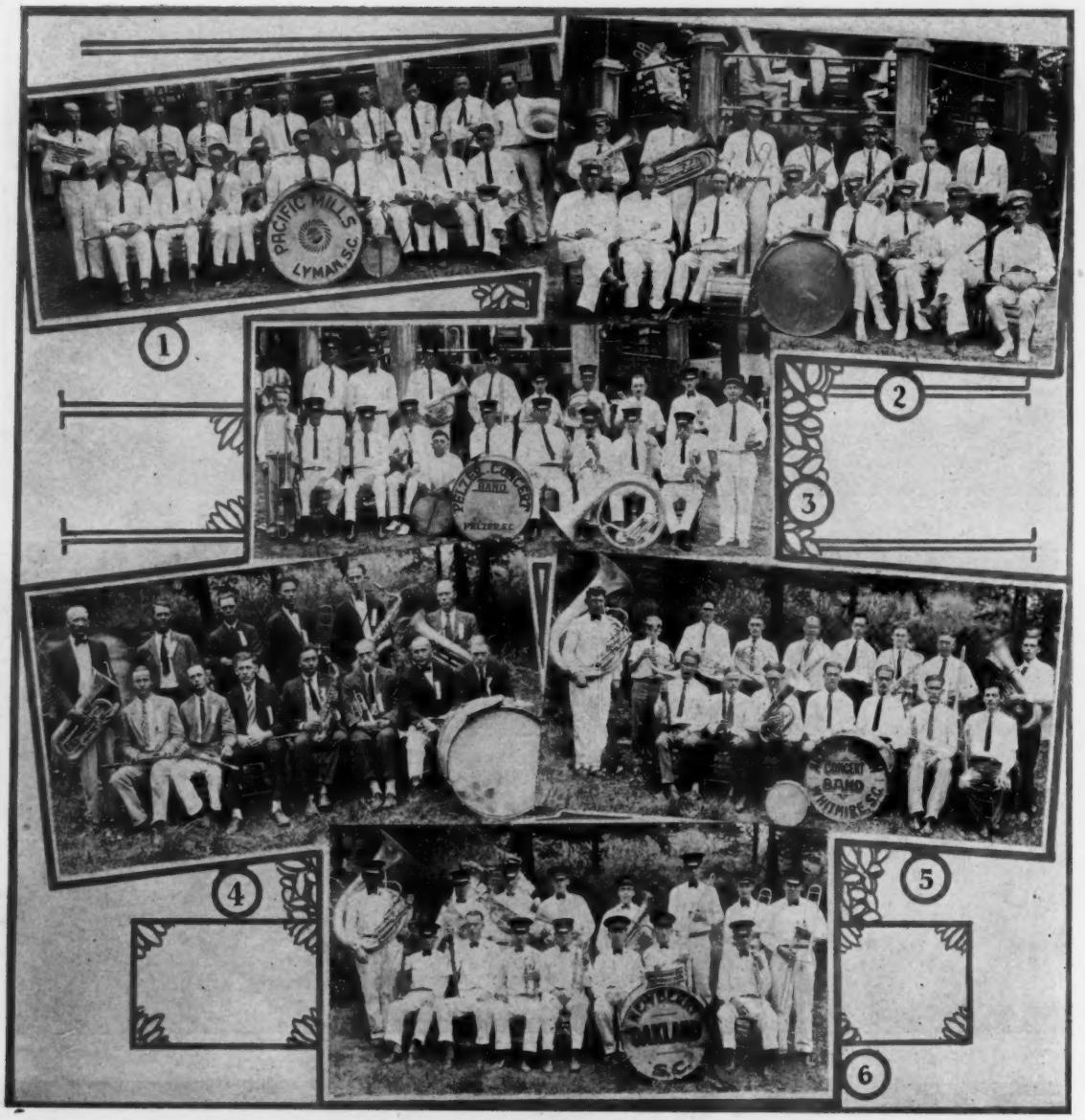
Furnishing an outlet for definite expression to those in the village with musical talent and inclinations is the most direct result of the mill band. However, more far-reaching, but no more important, is the influence provided in the village in the cultivation of appreciation for the finer arts, in which music ranks high. There is something intangible in music to which human nature inherently responds even without musical training or knowledge. The mill band fulfills this need in an elevating, inspirational manner.

As was brought out at the Spartanburg meeting, a properly-operated band or musical aggregation affects not alone those participating but extends its influence out especially to the plastic natures of the younger boys in the homes, who, as it was expressed, "have musical ambitions from the time they first hear the discordant circus band coming down the street, and want to grow up to emulate the cornet player who goes off on high *A* and at the same time resolve to follow in the steps of the perspiring bass-drummer." It provides as well a center of community interest, a thing of universal pride, with no contention of spirit or chance of unfriendliness or harsh feeling possible in an activity of a more competitive nature. And the ultimate value of that effect cannot be calculated. Above all it teaches by actual illustration the advantages of cooperation and coordination through the necessity of keeping in strict time with all the others, and the value of secondary and perhaps uninteresting parts for individual men that serve to round out the harmony and produce the music in all its fullness and beauty

In the face of a recognition of the pertinence of these general facts, the Spartanburg convention was in more than one sense a revelation to this correspondent and to several of the financial and operating executives who came along with the bands from their mills. The technique displayed

FREE FOR BANDS

PELZER CONCERT
BAND
PELZER S.C.
CONCERT
BAND
CLEVELAND
CLIFTON MILLS
W.O.W.
BAND
SPARTANBURG
KENDALL MILLS INC.
EMPLOYEES
BAND
WATERLEE MILLS

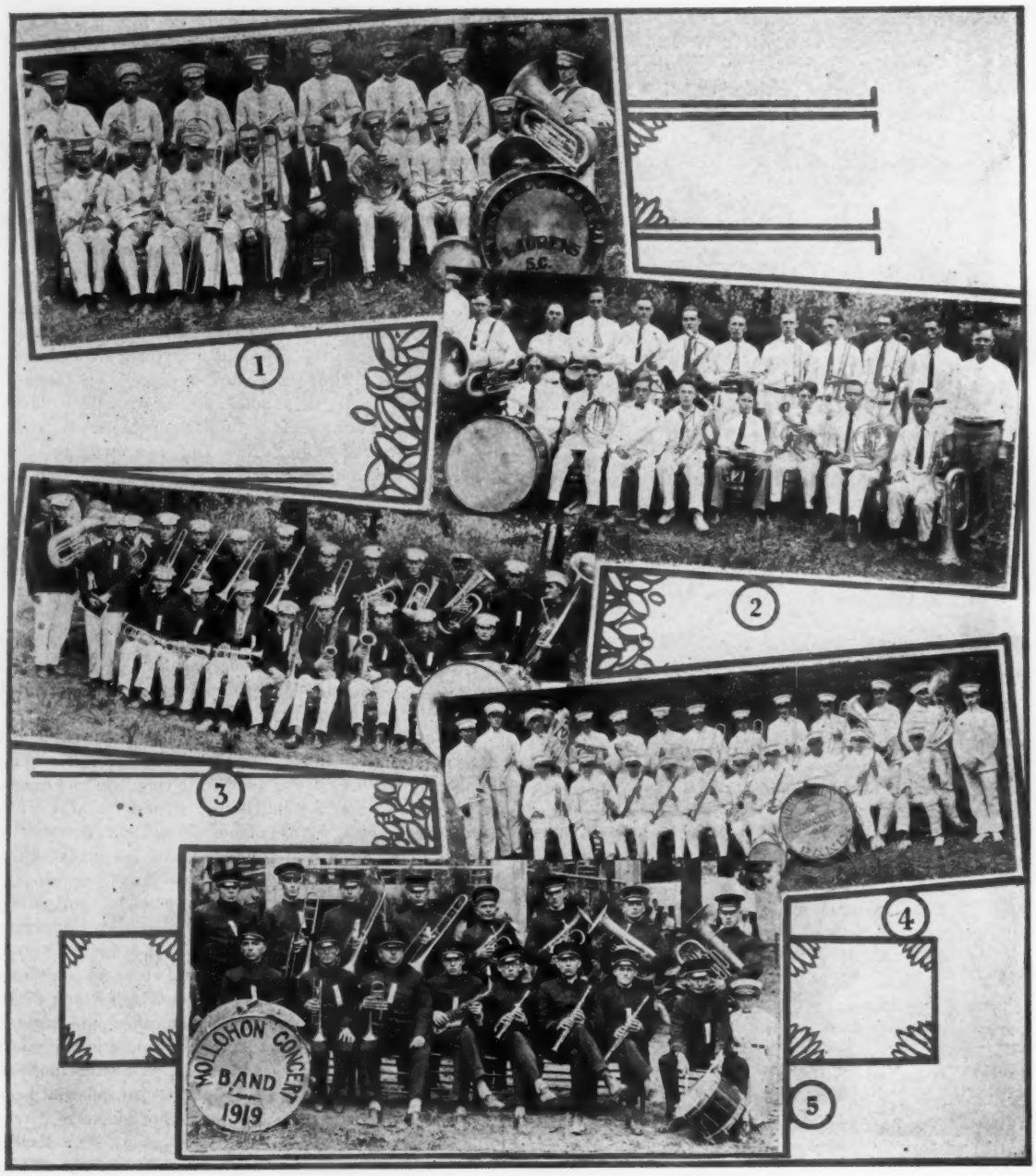


Six of the bands participating in the Textile Band Association convention at Spartanburg, on September 18th. (1) Pacific Mills Band, Pacific Mills, Lyman, S. C. (2) Wildwood Band, Easley Cotton Mills No. 1, Easley, S. C. (3) Pelzer Concert Band, Pelzer Mfg. Co., Pelzer, S. C. (4) Riegel Band, Ware Shoals Mfg. Co., Ware Shoals, S. C. (5) Aragon-Baldwin Concert Band, Aragon-Baldwin Mills, Whitmire, S. C. (6) Oakland Mills Band, Kendall Mills, Newberry, S. C.

by the bands was evident even to the musically-untrained ear. It is but honesty to say that inequalities of the amateur were anticipated, and it is with fairness and a sense of indirect pride that a program of excellence comparable to full-time professional organizations is reported.

Following a happy address of welcome by John A. Law, president and treasurer of the Saxon Mills, S. J. Bishop, overseer of carding at the mill and director of the Saxon band, began the presentation of the bands, each of which played three selections. The program called for selections from twenty-two bands, but time permitted the presentation of only half that number. The bands participating in the program are given in the following list in the order in which they played, together with the mill represented in each case:

Pacific Mills Band, Pacific Mills, Lyman, S. C., J. C. Darby, director; Wildwood Band, Easley Cotton Mill No. 1, Easley, S. C., H. O. Brandt, director; Pelzer Concert Band, Pelzer Mfg. Co., Pelzer, S. C., R. W. Hembree, director; Riegel Band, Ware Shoals Mfg. Co., Ware Shoals, S. C., Charles Koon, director; Aragon-Baldwin Band, Aragon-Baldwin Mills, Whitmire, S. C., S. B. Pruitt, director; Piedmont Band, Piedmont Mfg. Co., Piedmont, S. C., M. M. Smith, director; Watts Mill Band, Watts Mill, Laurens, S. C., C. L. Gunter, director; Oakland Concert Band, Kendall Mills, Inc., Newberry, S. C., B. M. Hughes, director; Fort Mill Band, Fort Mill Mfg. Co., Fort Mill, S. C., C. F. Proctor, director; Newberry Band, Newberry Cotton Mills, Newberry, S. C., J. S. Pruitt, director; and Mollohon Band, Mollohon Mfg. Co., Newberry, S. C., L. D. Rawls,



The remaining five bands taking part in the concert work: (1) Watts Mill Band, Watts Mill, Laurens, S. C. (2) Piedmont Band, Piedmont Mfg. Co., Piedmont, S. C. (3) Fort Mill Band, Fort Mill Mfg. Co., Fort Mill, S. C. (4) Newberry Concert Band, Newberry Cotton Mills, Newberry, S. C., and (5), Mollohon Band, Mollohon Mfg Co., Newberry, S. C.

director.

Photographs of each of the bands, taken at Spartanburg as each concluded its concert, are shown in the group layouts of this story.

This not being a musical criticism no discussion of the individual numbers will be made. However, to point a moral, or adorn a tale, it should be mentioned that the program varied from the rollicking rythm of "Thanks for the Buggy Ride," to the difficult and intricate "Stabat Mater," by Rossini, including a varied selection of marches, fox-trots and other pieces. And for his flawless rendition of the bass solo part in "Solo Pomposa," a lad named Fulton West, of the spinning room of the Watts Mill at Laurens, must be accorded especial personal mention.

The crowning feature of the meet came in the mass concert held immediately following the luncheon. The luncheon, by the way, must be mentioned as a festal occasion par excellence. It was served in picnic style, under the direction of Miss Marjorie Potwine and her assisting committee, and there was food a-plenty. Miss Potwine was exceptionally proud of the fact that every home in the village, save one, contributed in some manner to the luncheon.

The mass concert, given by all participating bands join-

ing together, was directed in four numbers by S. J. Bishop, conductor of the Saxon Mills W. O. W. Band. This was the concluding musical feature of the convention, and was repeated as a public concert on Spartanburg's main street following adjournment of the meeting.

At the brief business session, Dr. J. N. Bishop, of Laurens, was re-elected president; S. J. Bishop was made secretary; and J. S. Pruitt was retained as treasurer. A resolution calling upon the State Legislature to adopt a statute similar to the Iowa Band Law, whereby authorization is given any community or municipality desiring a band to levy a special tax for that purpose, was passed, and each member urged to exert his influence to that end with his local representative.

Textile Operating Executives of Georgia

Discussion of compensation insurance, accident prevention and safety work constituted the major theme of the semi-annual meeting of the Textile Operating Executives of Georgia, held at the Henry Grady Hotel, Atlanta, Ga., on Tuesday, September 14th. Superintendents and overseers from Georgia mills, as well as visitors from mills in other states, and machinery and supply men, composed the attendance.

According to the established procedure, this meeting was scheduled for discussion of the technical subjects of slashing and weaving. Because of the importance of the compensation insurance and accident prevention problem, the executives introduced this subject at this meeting to bring it forcibly to the minds of the members.

G. A. Franklin, general superintendent, Sibley Manufacturing Company, Enterprise Manufacturing Company, and Augusta Factory, Augusta, Ga., presided at the meeting as general chairman.

At the executive committee meeting held prior to the general session on Tuesday, John S. Bachman, agent and superintendent, Anchor Duck Mills, Rome, Ga., was named general chairman to succeed Mr. Franklin, whose term expired with this meeting. Frank S. Dennis was made vice general chairman to succeed Mr. Bachman. Mr. Dennis is manager and superintendent of the Union Division, Consolidated Textile Corporation, LaFayette, Ga. R. J. Jennings was made a member of the executive committee to fill the unexpired term of Mr. Dennis, and J. W. Hames was elected as a member for two-and-a-half years succeeding D. W. Anderson, whose term expired. Mr. Jennings is connected with the Lanett Mill at West Point, and Mr. Hames is superintendent of the Exposition Cotton Mills, Atlanta, Ga.

After a preliminary talk by Mr. Franklin, Mr. Philip introduced George S. Harris, president and manager, Exposition Cotton Mills, president, Cotton Manufacturers' Association of Georgia, and first vice-president of the American Cotton Manufacturers' Association, who outlined the organization and plans of the Cotton-Textile Institute.

Citing the irregular production and distribution conditions existing in the industry, Mr. Harris stated that the financial executives of the southern mills, at the American Association meeting in May, began to take definite action as to its solution. "We asked ourselves, first, should we not consider some radical changes in our method of doing business; if so, what is the proper machinery to carry it forward; and what direction to give the activities," Mr. Harris said.

"The result was the organization of the Cotton-Textile Institute. We started with naming a committee for the purpose of studying the question, and that committee unanimously voted that some definite positive policy should be adopted. We carried the committee to Greenville and enlarged it, and the enlarged committee concluded the same thing. Then we took the entire committee to Washington and went before Mr. Hoover and laid our plans before him, and he thoroughly approved everything we had done up to that time. Then we decided, in order to go forward, the movement should be national, and we thought it advisable to invite northern mills to participate in the work. Our next move was to go to New York and invite an equal number of men representing the northern mills, and we discussed the matter in New York an entire day. As a result both the northern and southern men ultimately approved the plan and named committees to work out the details, and called the first meeting of the Cotton-Textile Institute in New York for October 20th."

Mr. Harris then stated that at the moment there were approximately 19,300,000 spindles enrolled in the Institute and that by the time of the meeting on October 20th, it was expected that 20,000,000 spindles would be represented in the agreements signed.

As to the reasons for the Institute, Mr. Harris explained that "we are trying to stabilize your work. We are trying to make it possible for you to operate month in and month out on some kind of a stable basis. In this business it has been from a feast to a famine. You know the trouble you have. I was a mill superintendent for many years, and I know how I felt during those famine periods. I wasn't looking beyond my own mill and I didn't understand it. I was told to reduce production, which meant disorganization in the entire plant, and I fought it.

"But now we have reached a point where we must control production ourselves. We realize that we can't direct a man's activities. We can't tell him when he shall run and when he shall not run, but we do propose to lay before that man the facts as regards stocks, as regards possible demand and the direction in which that demand will probably be, and depend upon him to use his judgment.

"Among the southern mills," continued Mr. Harris, "there was a period when anybody could operate. There was always a definite demand for our production. We built mills during the war, and since the war, in a big way, until it appears now that we probably have sufficient spindles to satisfy the demand 60 per cent of the time. The other 40 per cent of the time we have more goods than the markets will absorb. We find ourselves running in circles, fighting one another. The merchandising men will sell the goods at whatever the market will pay, and you begin to feel the pressure of pulling down your labor cost."

In the Institute work, Mr. Harris stated, various lines of activity will be carried on. "The statistical part of it is probably the most important, but in addition to that we expect to do research work both at home and in foreign countries. We expect to handle the export business as never before. It has been suggested that through the Cot-

ton-Textile Institute we might organize a large export corporation, through which we all would put a percentage of our production. Unfortunately we have never been able to develop an export business in this country, particularly since the war. I think I can count probably 18,000 to 20,000 looms which up to 1919 had every yard of their production going out of the country, and today I question whether 10 per cent is being exported. You can quickly see what that has meant to the American market, already over-supplied.

"We expect to develop new uses for cotton goods through the Cotton-Textile Institute. Individually we have not been able to do it, but collectively we can.

"Another thing that has been in our minds is the question of the sentiment against cotton goods. We are supposed to have a cheap commodity. The silk people and the wool people have created the feeling that cotton goods are cheap. Through advertising we expect to be able to bring back cotton and its production to the position we once held. Individually we cannot do that, but in the Cotton-Textile Institute all mills will be grouped—print cloth mills in one group, drills and twills in another, and so on down the line. These groups will be able to consider not only marketing conditions, but also special advertising work and special research work. In this Textile Institute we propose to have a real working organization with resources which will amount to approximately $400,000 a year."

An outstanding industrial leader will be selected to direct the Institute. He emphasized that the Institute would be a cooperative movement, that men would gather around, putting all the cards on the table, and avoiding the feeling, "I'm running my plant; to hell with the other fellow."

The final point which Mr. Harris emphasized particularly for the practical men was that of cost accounting. "There is no question but that the southern mills are off on their cost accounting," he said. "We have got it in our minds that we know all about our costs and that it is safe to estimate costs. It can't be done. Your president probably thinks he knows the cost of his constructions, but if he is making more than one fabric in his mill, I'll bet him dollars to doughnuts that he doesn't know what these items cost. That has made a bad condition in our markets. The differential in the cost has kept our markets in a turmoil.

"Urge upon your presidents that the work of cost accounting today is that of an expert. Give the matter serious thought and employ a thoroughly trained cost accountant to come into your mill and determine your costs for you."

At the conclusion of Mr. Harris' remarks, Mr. Philip introduced the insurance and safety discussion by pointing out that the organization, since its beginning, had been discussing technical subjects exclusively, and that at this meeting, it was decided "that possibly by discussing something of general mill application, an interest would be created in this work. In addition to that, this matter of safety work and compensation insurance is one vital to every one of us, and it also has a more general application because it is more general in its nature than anything pertaining to any process because your own local conditions would vary the application of anything of that character to your own mill."

D. W. Anderson, of New Holland, assumed charge of the meeting at this point, and began the insurance discussion. "You all know, for a number of years, the majority of mills carried some form of accident or liability insurance," he said. "That was more or less unsatisfactory, and later on the state, through our legislature, passed a law making this liability insurance compulsory. The mills had to carry it, and it is under the supervision of the state.

"Under the old insurance plan, as far as we know, there was no definite set basis of settlement. Some mills carried one policy, and some another, and in the case of some it would be necessary for the employee to sue to get any compensation whatever. Personally I prefer the present method of compensation insurance. It is all listed down, the various amounts to be paid for certain forms of injuries, and it keeps down a lot of friction and hard feeling between the employees and the company. Under the present plan I don't think we have ever had at either one of our mills any contesting of the awards.

"A number of years ago, when the larger fire insurance companies were formed, fire insurance was pretty high for

George A. Franklin, General Chairman.

the mills. Then the old-line companies and the mutuals began seeing where improvements could be made and offered a lower rate as an inducement to mills which would carry out their recommendations. It is astounding to compare the present rate for fire insurance with the rates of 25 or 30 years ago. That has been brought about by the constant lowering of the fire hazard and various improvements around the plant. Of course it is true that this costs the mills a good deal of money indirectly, not charged directly against insurance, but I think we will all agree that it has been money well spent.

"Now I think that compensation insurance is in a sense about where fire insurance was 25 years ago on the matter of rates. It seems we have a basic rate and then get certain credits for the condition of the plant; then we get other credits on smaller numbers of accidents. In other

words, we participate in the experience. If we are fortunate enough to have just a few accidents, and our medical bills run low, we participate in those savings to a certain extent. I believe that as time goes on, and we watch and adopt the recommendations which the insurance engineers make, we will bring down the number of accidents and the cost of the accidents.

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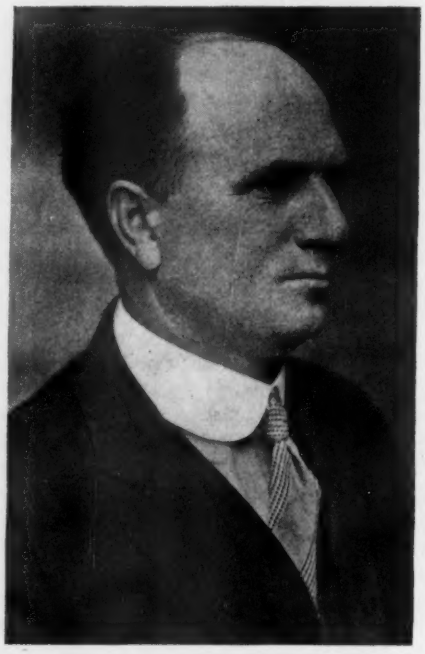

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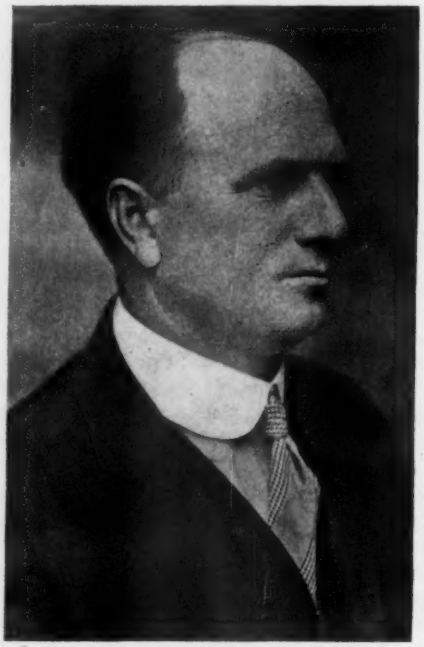

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has been recently overhauled and placed in first class condition. The directors at this meeting approved a program of improvements in the village. Mr. Rice, vice-president, is in charge of operations at the mill.

The New England Mill Situation

New England is still making headway toward a restoration of better conditions in the cotton industry in consequence of the sustained demand for goods noted since the early part of July. The mills have a long way to go in the matter of profit possibilities before manufacturers are fully satisfied that the improvement is genuine.

Since the first of September there has been a steady gain in the volume of fine goods business offered. Mill men have not been keen sellers nor have the converters been free buyers. Prices are too close and the orders too small to arouse enthusiasm thus far. There has been a large amount of business placed on rayon decorated fabrics of various sorts and carded and combed broadcloths have made up a substantial part of the orders booked. Carded broadcloths have been rather more active than combed styles but the latter have shown more gain in demand recently.

There have been some sizable orders placed on voiles for printing, and some mills have sold sateens in a fairly liberal way. Pongees, lawns, and batistes have sold rather better, but the plain goods business has not reached the proportions anticipated a month ago. It is still believed that sheer plain goods in the finer yarns will come into wider vogue for printing purposes as a great deal of sampling has been done in that direction among the finishers. There has been some fair orders placed on corded and checked dimities but they are not important enough to stand out as prospective leaders.

The mills have not as a rule been purchasing rayon yarns as freely as last year. It is too early as yet to say that this means a lessening of the final volume of rayon fabrics to be on the markets for spring. The mills have not ordered rayon yarns ahead as they now feel that they will be able to get supplies as they require them and are not troubled about any probable price advances.

There have been a great many rayon alpacas and rayon baronet satins ordered and they will be delivered for underwear purposes, chiefly. The rayons that are being made for printing purposes are generally of a more sheer character and of finer yarns. There are less of the coarse rayon fabrics being made for printing than a year ago, the experience of the trade this year with goods of that character not having proved satisfactory.

Indications up to this time are to the effect that silk is not losing its hold upon consumers and fine cottons will be forced to compete with silks to hold their place. There has been a distinct improvement made in the finishing and coloring of fine cottons in the past two years, while the printed styles of fine cottons have been decidedly the best selling merchandise. Mills are not getting the normal volume of spring orders from the converting trade on fine fabrics above 60s yarns. The shirting business offered has run into larger volume than a year ago and more madras and silk decorated lines are in work. In the cheaper grades, rayon stripes are being used more generally than last year.

Rayons for draperies with cotton, have been in better demand than all rayon products. Some mills are busy on goods of this character, so much so that the usual business on all cotton marquisettes and similar curtain materials seems to have passed out for the time being. A great many of the rayon draperies are of a heavy character. Some are being made to match up with bedspreads and pillow covers in room decoration. On this sort of work jacquard and multiple dobby work figure largely.

The trade at Fall River for two months has been the best recorded in two years. Stocks of 36 inch thin constructions have been depleted and production in that center is now broader than it has been for at least two years. There are still several mills idle there but it is thought that 75 per cent of the capacity of the center is employed.

At New Bedford, the gain in production has been very steady for the past four weeks and it is estimated that close to 90 per cent of the single shift capacity is operating. There are many spindles idle there due to the slow trade in yarns but weaving mills have been doing much better recently. In Lowell, the mills are running better than at any time for a year and mills in some of the smaller Massachusetts centers are doing somewhat better. At Fitchburg, two incidents have attracted attention. The Nockege Mills have met with financial difficulties and the Grant Yarn Mills were reported as likely to be sold for taxes. In some other sections of Massachusetts, the blighting effect of a 48 hour law is still visible.

Rhode Island and Connecticut mills have been making very steady progress. In Connecticut some mills are running overtime. In Rhode Island, the Lonsdale company is doing distinctly better. A strike of short duration in the Manville mills has been settled. The reorganized Knight mills are better occupied than at any time this year.

New Hampshire mills are now being operated nearer to capacity than at any time this year. Parts of the Amoskeag plant are still idle but there are other departments being operated at night. The Nashua mills are doing distinctly better. In Maine, the mills are gaining constantly with the Pepperell and Hill mills doing rather better than others. That New England mills as a whole are much better employed is seen in the heavier cotton consumption and the general movement of cotton over the railroads in the past few months.

New prices were named for the spring season on ginghams and other wash fabrics on the same level of price as that which has been prevailing for fall. The changes reported are of a minor character on all cotton goods. On rayon cloths, prices are down from 4c to 7c a yard compared with a year ago on fabrics intended for dress purposes.

New England manufacturers and merchants have been active in developing new merchandising plans of many kinds. Commission agents representing many of them have undertaken extensive advertising campaigns and have been varying their output constantly. It is well recognized that there is a deal of risk involved in the fancy and novelty production now being featured in New England, but it seems to offer the only sustained outlet for volume production. The mills are constantly being forced to adopt new stock carrying and new shipping methods to meet the demands for quicker service to the trade. While this is making for higher costs to consumers the latter seem able or willing to pay to the extent of warranting mills in trying out new methods that would not have been considered seriously a couple of years ago.

MATHIESON Chemicals

Mathieson Traffic Service

THE complicated industrial structure of today has made transportation one of the foremost problems with which industry has to contend. Expert traffic counsel has become essential to the prompt and efficient handling of freight movements.

In the chemical-consuming industries in particular, where highly technical materials are dealt with, the traffic expert is indispensable. Yet comparatively few consumers would be justified in maintaining a traffic department of their own in order to keep fully informed on traffic matters.

It is for this reason that the Mathieson organization includes a full staff of traffic experts for the service of all customers. Questions of freight rates, routings, tracing and expediting of shipments, claims against carriers, etc., are all handled for Mathieson customers by our well organized Traffic Department. Our staff welcomes the opportunity of assisting customers with their traffic problems and is on the alert at all times for traffic changes which might affect their interests, whether or not such changes have any direct connection with Mathieson products.

Consumers should give careful consideration to the advantages of Mathieson traffic service before seeking a source of supply elsewhere.

See us at Booth No. 256, Southern Textile Exposition, Greenville, S. C., Nov. 1st to 6th.

The MATHIESON ALKALI WORKS Inc.
250 PARK AVE. NEW YORK CITY
PHILADELPHIA CHICAGO PROVIDENCE CHARLOTTE

Caustic Soda ~ Liquid Chlorine
Bicarbonate of Soda
Anhydrous Ammonia

Soda Ash ~ Bleaching Powder
Modified Virginia Soda
Aqua Ammonia

Deal Direct with the Manufacturer

Many manufacturers still contend that if raw cotton settles to a basis of around 15 cents a pound, it will offer a real solution for a great many of the troubles experienced

Manufacturers in this section have not rushed into the new Cotton-Textile Institute. Some few have little or no faith in it as a means of bringing about more satisfactory conditions within any reasonably early period. Others think they may be giving up some of the independence characteristic of New England by joining with manufacturers elsewhere in exchanging information. Some say they have fewer goods on the looms of an exchange value in conjunction with mills making staples such as print cloths, sheetings, etc. But ultimately it is believed that New England will join in the new movement more heartily, once they become convinced that something more than an exchange of information is going to be attempted.

While there are many cotton manufacturers who have a larger degree of confidence in the future of business than they had a month or two ago, there is no gainsaying the fact that there are many who do not look for a restoration of real prosperity in the cotton industry as a whole for a long time to come. At the moment that manufacturers and merchants are stating that greater information will prevent unmercantile and unwise production, it is obvious that southern and other mills are intent upon running their mills night and day so long as they can secure orders to warrant full operation.

The doubting manufacturers state that this condition is not going to be changed by any form of Cotton-Textile Institute yet discussed. The manufacturers who insist that they are reducing costs by night running are the same ones who recognized, belatedly last spring, that overproduction through overtime operations was the fundamental cause of the breakdown in the industry. The certainty of production running ahead of demand is so generally believed here that it is not debatable in many places. It is contended that if the manufacturers who know this to be the fact will not be satisfied with single time operation the net result will be a continued inter-mill competition that will be crushing.

For the time being the New England manufacturers are in no position to criticize. Because of legislative restrictions they are unable to operate their mills night and day, profitably, the exceptions being the few instances where men can be employed in place of women and children. Some of them say they would run their mills night and day if they could and they are not going to find fault with the men who can and do run. Nevertheless, until something broader in the character of demand is seen, it is not going to be easy to convince New Englanders that the industry is headed for a sustained period of good times. Neither low cotton, easy money, nor good merchandising can overcome continued overproduction.

The Lawrence Manufacturing Company, Lowell, Mass., in process of re-organization under the leadership of C. Brooks Stevens of Lowell, has decided to sell some of the surplus yarn machinery it finds on taking inventory. The mill is now equipped to manufacture very fine carded and combed yarns, spinning from 16s to 40s. It has at present about 125,000 spindles, and it is proposed to offer up to 40,000 of these spindles. The machinery will be sold in separate units or in complete spinning units, it is stated, and all the preparatory machinery, in addition to the spinning frames, is included.

Cotton Comment

BY H. AND B. BEER

New Orleans, September 11th, 1926.

The recent sharp decline in the cotton market is hardly justified since returns to the government, as of September 1st, indicated a yield of 15,166,000 bales vs. 15,621,000 indicated as of August 1st, a shrinkage of 455,000 bales, especially since last year's crop was 16,104,000 bales exclusive of linters, and the fact that the average price of middling in New Orleans last season was 19.88 or nearly 20 cents per pound.

It is probable that the smaller private crop estimates, some ranging from 13,400,000 to 13,900,000 bales, were taken too seriously, and it is likely that the market was somewhat overbought, hence the reaction that set in after publication of the recent government crop forecast. However, it is probable that the weak long interest has been pretty well eliminated by the late important decline, due to extensive liquidation, and it is likely that the market is now in a healthier technical position in consequence.

The present indicated supply for the season, based on the latest of government crop forecasts, and including last season's carry-over and linters, is about 21,589,000 bales of American cotton vs. about 20,426,000 last season, which is not burdensome since much of the carry-over was undesirable low grades, and since present prospects are that the world will likely consume more than last year's record consumption of 15,165,000 bales, perhaps 15,500,000 bales or more.

This year's crop is still in the making, it is very late in maturing, consequently subject to further injury in event of unfavorable weather or more damage by insects, and by the possibility of an early general killing frost.

The market is about 125 to 150 points lower than it was before the issuing of the government crop forecast on September 8th and is about 310 points lower for middling than the average price of middling last season. In fact present prices are about 700 points lower than at this time last year.

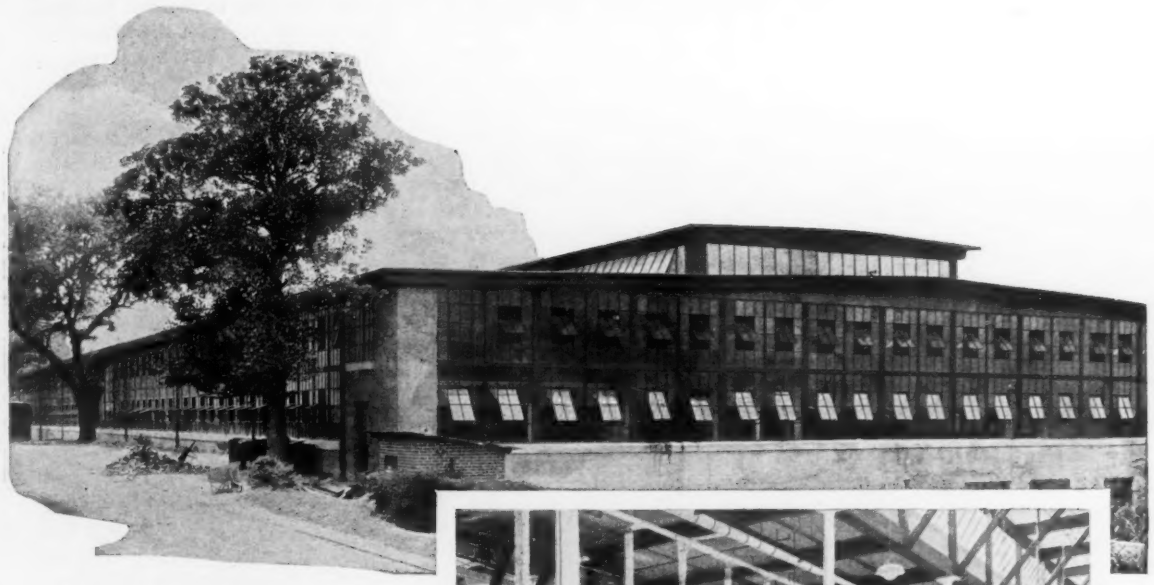
Ginnings to September 1st were the smallest since 1921, and are likely to continue light for sometime to come. To the first of September only 695,000 bales were ginned vs. 1,886,000 last year.

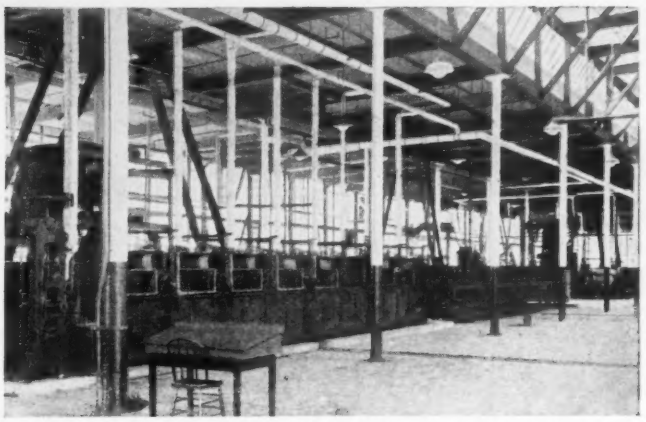
As a result of the light ginnings, free exports and large mill takings, the stock at 29 interior towns will probably be smaller than last year by next Friday. Already the stock at all United States ports is smaller than one year ago. By October 1st, perhaps sooner, the world's visible supply of American cotton, which, on July 31st was 970,000 bales larger than last year, will likely be as small or smaller than last season, as it is only 326,000 bales larger than last year now.

The continuance of light ginniugs for some time to come will make for the continuance of a small movement to market. Thus far this season, due to the small gin output, the South has marketed only 930,000 bales against 1,469,000 last year.

Meanwhile, compared with last season, exports from the United States total 502,000 bales vs. 407,000 and spinners of the world have taken of American cotton 1,108,000 bales compared with 1,003,000.

Textile trade conditions in the United States have shown





Gregg Dyeing Plant, Graniteville, S. C., a modern textile plant equipped with Truscon Steel Windows. J. E. Sirrine & Co., Greenville, S. C., Architects and engineers.

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Truscon offers the most complete line of industrial Steel Windows and Mechanical Operators for textile plant daylighting and ventilation. Furthermore, Truscon backs up the product with an engineering service that insures satisfaction. When you build or add to your present plant incorporate Truscon Windows and Mechanical Operators for efficiency and economy.

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In the design of your textile mill you can avail yourself of Truscon engineering counsel and in the construction Truscon National Erection Service relieves you of all responsibility.

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a marked improvement of late, there being more demand for cotton goods than for months past, and general domestic trade conditions are favorable for a large fall business owing to labor being well employed at high wages, and because of fair prices being obtained for fairly large crops of agricultural products, which will likely maintain, perhaps increase the purchasing power of the masses.

In Europe fairly large crops of food and feedstuffs have been made also, with fairly good prices prevailing. Germany has been admitted to the League of Nations, and the general economic and political situation abroad appears to be gradually improving.

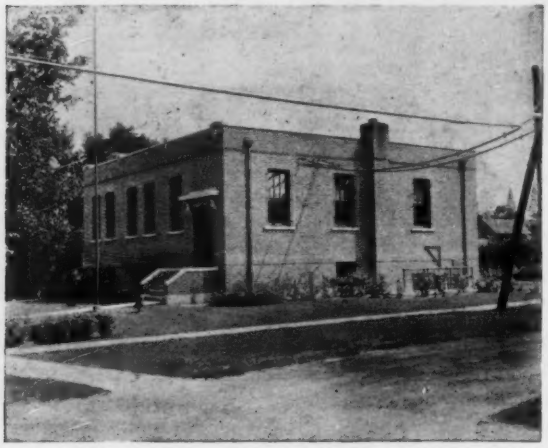
As we see it, the outlook is for the continuance of prosperity in the United States and Japan, and a slow but steady improvement in the general business and financial situation abroad. The only dark spot is the civil war in China.

Repeater Stations and Their Use.

Motoring through the country these days, many a traveler glances admiringly at certain spick-and-span buildings that have sprung up here and there along the highways. Frequently he flings a curious "Wonder what that's for?" at his follow tourists.

And if by chance his companions know what's what in the realm of telephony, the answer is readily produced. "That," he hears, "is a long distance repeater station."

Located along the routes of the steadily increasing long distance cables, and spaced approximately fifty miles apart,



A Long Distance Telephone Repeater Station.

these trim, brick buildings are housing equipment that keeps the nation's speech arteries pulsing at high standards of effectiveness.

The term—repeater station—itself suggests the use to which the buildings are put, for among the many intricate pieces of telephone apparatus under their roofs the telephone repeater or voice amplifier plays a vital part in strengthening and sending on to the next station the currents flowing over the long distance lines.

On entering one of these stations the visitor is confronted by an orderly arrangement of wires and numerous kinds of telephone apparatus. The incoming and outgoing cables are terminated on ceiling-high frames from which point the wires are brought to the test board, where the circuits can be tested and switched if occasion demands. On all sides delicate instruments are noted, enabling electrical measurements to be made on circuits temporarily in trouble so that the tester can tell how far from his station the particular trouble is located.

The telephone repeaters or amplifiers consist of vacuum tubes, transformers and associated apparatus. They are mounted on panels, the panels in turn being placed one above the other on iron racks extending from floor to ceiling. On some of the large cables there are as many as 250 repeaters in each station. Adjacent racks contain miscellaneous equipment such as that for ringing on the circuits, simultaneous telephone and telegraph operation, telegraph repeaters, and so on.

In another section of the building is found the power equipment. A local source of electric power is brought into the power switchboard, and from this point it is distributed to the various motors which drive the direct current generators and ringing machines.

The direct current generators supply the power necessary to operate the telephone apparatus. A large storage battery is so connected to the generator that in the event of a failure of the commercial source of power this battery would operate the telephone apparatus. Where conditions warrant it a gas or kerosene engine is installed, ready at any moment to drive the generators.

Repeater stations are invariably of pleasing architecture and tastefully landscaped, harmonizing with the residences or other structures of the communities near which they are located. All of them are of fireproof construction.

On the New York-Chicago cable route alone there are seventeen repeater stations each performing its part in providing long distance telephone service of a standard impossible a few years ago.

Master Mechanics to Meet.

Formation of an active Master Mechanics' Division of the Southern Textile Association is planned at a meeting to be held in the Chamber of Commerce Building, Charlotte, N. C. ,at 10:00 o'clock, Wednesday, October 27th, according to plans made by the Charlotte Engineers Club and J. M. Gregg, secretary of the Southern Textile Association.

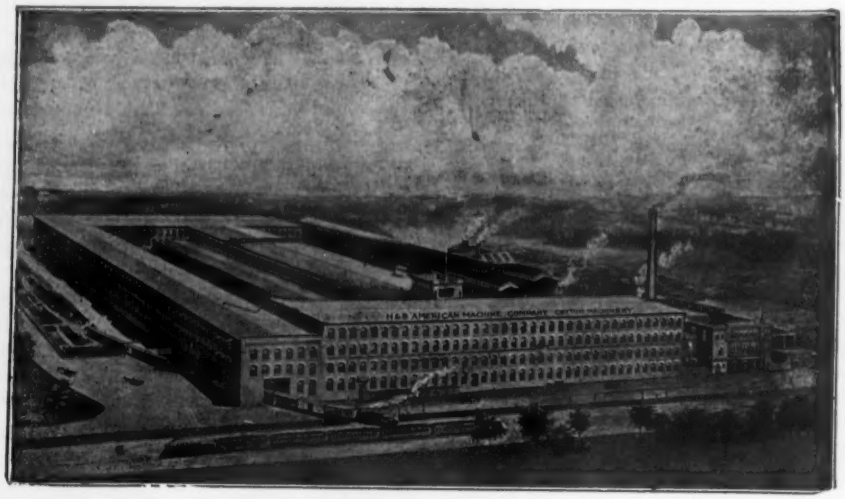
Master mechanics of textile mills of the South are invited and urged to attend the meeting. Among the subjects to be taken up are "What are the steps to take in determining whether or not there is excessive coal consumption?"; "What are the steps to take in determining power consumption?"; "How do heating systems use more steam and coal than necessary?"; and "What are the best books for an ambitious master mechanic to study?"

Members of the Charlotte Engineers' Club and leading textile master mechanics will lead the discussion on these and other subjects.

At 12:30 P. M., luncheon will be served, during which there will be an address by F. Gordon Cobb, vice-president and general manager of The Lancaster Cotton Mills, Lancaster, S. C., and a talk by W. S. Lee, vice-president, Southern Power Company, Charlotte, N. C.

JOHN J. BROWN has resigned his position with the Hamilton Web Company, Wickford, R. I., and will remove to Springfield, Mass.

COTTON MACHINERY



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NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

J. I. ALFORD, who last year held the position of carding and spinning instructor at the A. French Textile School of Georgia School of Technology, Atlanta, Ga., and who has been connected with the Griffin Manufacturing Company, Griffin, Ga., during the past summer, has been made superintendent of the Crawford Cotton Mills, Crawford, Ga. Mr. Alford is a graduate of the Georgia School of Technology in textile engineering, going, upon being graduated, with the cotton mill department of the Atlanta Woolen Mills, Atlanta.

W. D. LAWSON has resigned his position with the Borden Manufacturing Company, Goldsboro, N. C., to accept a position as superintendent of the Marlboro Mills No. 1 and 2 at McColl, S. C.

G. S. ELLIOTT has been made assistant superintendent of Pacolet Manufacturing Company, No. 4, New Holland, Ga.

C. W. MCNEALY, for a number of years superintendent of the Echota Cotton Mills, Calhoun, Ga., is now general superintendent of Cotton Mill Products Company Mills No. 1 and 2 at Natchez, Miss.

R. L. PAYNE, formerly connected with the Echota Cotton Mills, Calhoun, Ga., is now overseer of weaving at the Cotton Mill Products Company plants, Natchez, Miss.

R. H. MAUPIN has resigned as superintendent of the Star Thread Mill and Princeton Manufacturing Company departments of the James White Cotton Mills, Athens, Ga., to take a similar position at Galveston, Texas.

B. S. PIPER has been appointed overseer of weaving at the Maginnis Cotton Mills, New Orleans, La.

MAJOR H. RAIFORD GAFFNEY has been selected as instructor of designing at North Carolina State College, Raleigh, N. C. Major Gaffney, who is a native of Gaffney, S. C., is a graduate of the College of Charleston and of the Georgia School of Technology. He previously has been connected with the Irene Mills, the Eagle & Phenix Mills, and the Judson Mills and Mooresville Cotton Mills.

W. D. BRIGGS, for some time secretary-treasurer and general manager of the Caraleigh Mills Company, Raleigh, N. C., has been made president and treasurer, filling the position of the late J. R. Chamberlain who was president of the company.

DELPH J. BEAULIEU has resigned his position in Amsterdam, N. Y., and accepted a position as overseer of knitting for the Campbell Knitting Mill Co., Elmira, N. Y.

P. B. MOORE, formerly assistant superintendent and overseer of weaving at the Minneola Manufacturing Co., Gibsonville, N. C., has taken the position of overseer of weaving at the Manville-Jenckes Company, High Shoals, N. C.

C. H. JOHNSON has been appointed engineer, service department, The Timken Roller Bearing Co. He will have direct charge of the installation of Timken bearings in automotive and industrial applications.

WILLIAM R. NOONE, treasurer of William R. Noone & Co., selling agents for the Joseph Noone Sons' Co., of Peterborough, died at the Peterborough Hospital on August 8th.

E. G. WAITS has become overseer of carding at the Newberry Cotton Mills, Newberry, S. C. He formerly held a similar position at the Appleton Mfg. Co., Anderson, S. C.

GEORGE S. ESCOTT, one of the truly beloved characters in the southern textile industry, died at Columbia, S. C., on Tuesday, September 7th, following a three-weeks illness. For more than a quarter of a century, Mr. Escott had been intimately connected with the southern industry, and contributed much toward its development and improvement. From 1899 to 1923, he operated the Mill News, a textile magazine devoted to the industry. In May, 1923, this magazine was taken over by the American Wool and Cotton Reporter, with which publication Mr. Escott was actively connected as associate southern manager. At the time of his death, Mr. Escott was 81 years of age, and up until his final illness, was most active and energetic, traveling the textile territory in his own automobile. He retained until his death the kindly courtesy of action, the character of a Christian, the unselfish, keen and active interest in the industry, which made for him a place in the hearts and affections of those who knew him over the extended period of a useful life.

JOHN H. QUINLAN, who until two years ago was general manager of the Cedartown Cotton & Export Company, Cedartown, Ga., died in California on Tuesday, August 31st. For over 25 years Mr. Quinlan had been actively connected with the textile industry, operating the plants at Cedartown, but ill health two years ago caused him to retire from active work, and he and Mrs. Quinlan removed to California. He was a popular and important factor in textile manufacture in Georgia during his connection with it, and his many friends in the industry, to whom his retirement from active associations was a matter of regret, are saddened by his death and extend sincere sympathy to his widow and son who survive him.

L. C. MANDEVILLE, head of Mandeville Mills, Inc., Carrollton, Ga., died at Asheville, N. C., on September 7th, at the age of 76 years. Mr. Mandeville, through his developments, had contributed immeasurably to the growth and progress of the South industrially and agriculturally. He was president of Mandeville Mills, chairman of the board of directors of the First National Bank of Carrollton, and trustee of Agnes Scott College and Oglethorpe University in Atlanta. He is survived by his wife; two sons, J. A. and L. C., Jr., two daughters, Mrs. C. K. Henderson and Mrs. J. O. Newell, and one brother, W. C. Mandeville.

F. B. MCDONALD, formerly night superintendent at the Swift Spinning Mills, Columbus, Ga., is now superintendent of the Monticello Cotton Mills at Monticello, Ark.

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1. A chemical background of 124 years.
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3. Constant chemical control during production.
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5. The greatest of care in standardization.
6. Conveniently located branch warehouses.
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8. Contact with an organization imbued with the spirit of service.

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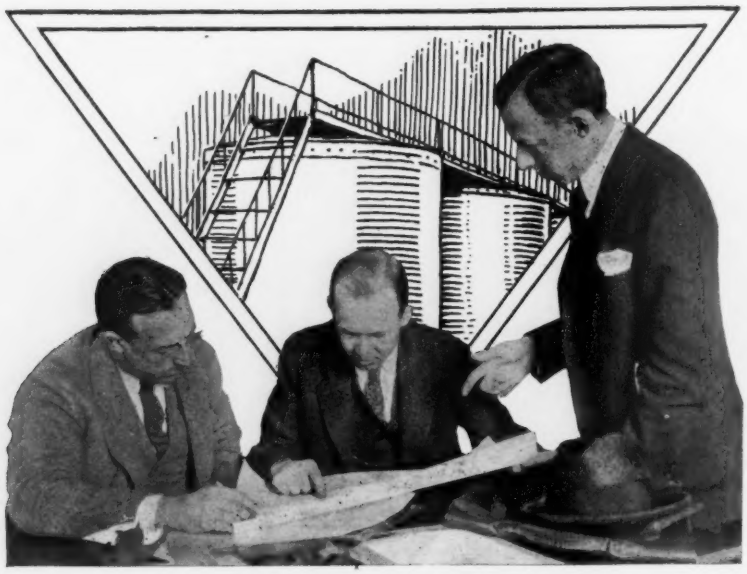

Do your goods feel harsh or soft?

NATURALLY you have talked this over with your mill executives. Of course, *you want goods soft.* But often they *feel* harsh because an excessive amount of alkali has been used in the strenuous effort to get them thoroughly clean.

How to bring goods from the kier so that they will be CLEAN and still have that desirable soft feel, has been solved by many textile mills simply by cutting down on the amount of caustic used and adding a small quantity of Oakite.

What happens then? Well, the harshening effect of the caustic is minimized, kier stains and caustic burns are eliminated, and because Oakite does its full share of cleaning, the goods come from the kier even whiter than before and so require less bleaching. Goods are more attractive in appearance and have a better *tone.*

Even though your own wet finishing problem is distinctly individual, nevertheless the essential points of the experience of many other mills using Oakite can serve to indicate the kind of results you might reasonably expect if you too used it.

If you are going to Greenville, stop in at Booth No. 204. There you can get first hand information about Oakite and how this remarkably efficient detergent can help you improve the quality of your work; or write and ask for our booklet, "Wet Finishing Textiles." No obligation, of course.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of the United States and Canada

OAKITE

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Industrial Cleaning Materials and Methods

OAKITE IS MANUFACTURED BY OAKITE PRODUCTS, INC.

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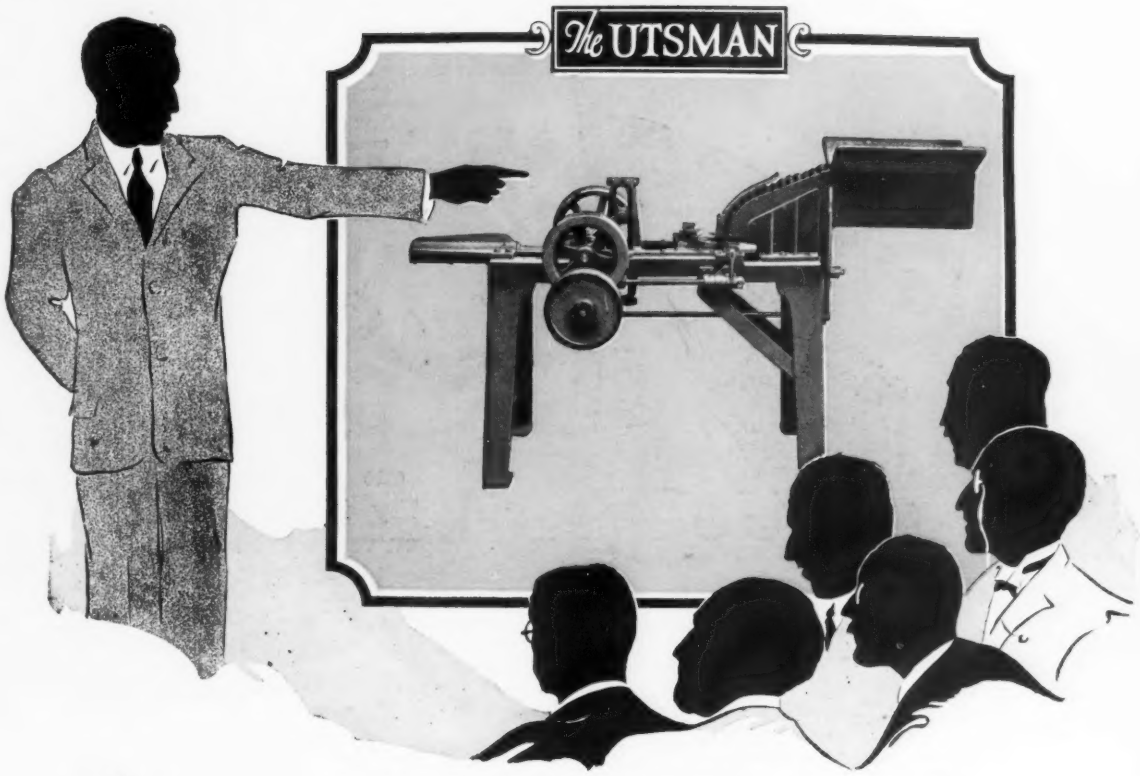


Is Your's an UTSMAN *Mill?*

There are literally hundreds of mills in the United States, Canada and abroad which have been able to make substantial annual savings by cleaning feeler bobbins with Utsman Cleaners.

If your mill is not one of these, possibly it is because our Engineering Department has found yours is one of those exceptional cases where an Utsman will not effect a worth while saving.

However, it may be that an Utsman will cut your cleaning cost, your cost of feeler bobbins and your non-productive labor cost (caused by delays of departments resulting from broken bobbins or from waiting for cleaned quills) to such an extent it will pay for itself over and over again in a comparatively short length of time.

The single end Utsman cleans approximately 4,000 and the double end Utsman approximately 8,000 bobbins every hour, without cutting or splintering of the bobbins.

It gets all the waste and leaves the bobbin whole.

Without the slightest obligation upon your part, write us for complete information regarding the Utsman Feeler Bobbin Cleaner, and what it will do for your mill. Address, Engineering Department,

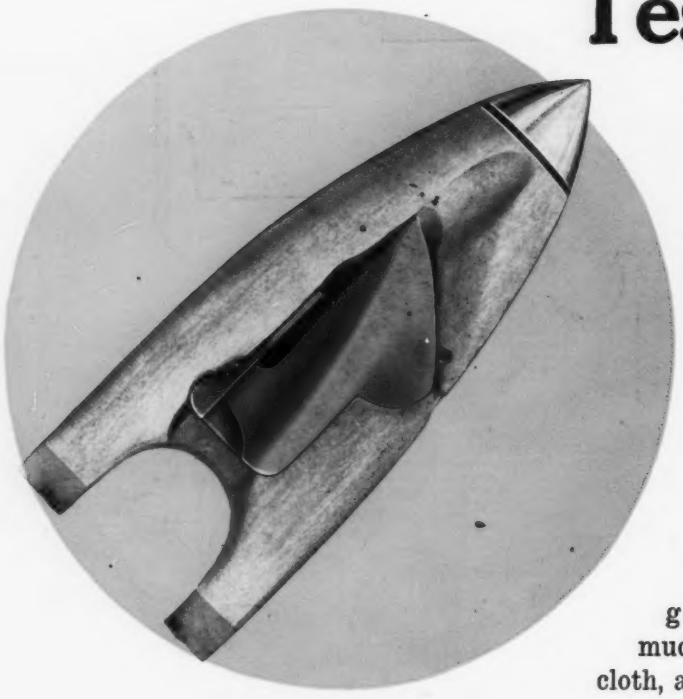
The Terrell Machine Company, Charlotte, N. C.

UTSMAN

FEELER BOBBIN Terrell CLEANER

Test This New D. Eye

at Our Expense



PUT a shuttle equipped with this new improved eye in one of your automatic looms. Try it on the meanest weave you've got and make a comparative test of loom stops for broken filling. Then you will know how good this new eye really is, how much it improves the quality of your cloth, and how much it speeds up production.

These Features will Improve Your Fabric

Front pitch of eye increased so that the filling positively cannot ride the eye and will get into the outside delivery eye on the second pick after the bobbin transfer. This eliminates all possibility of shuttle cut filling.

Back safety hook lowered to prevent broken filling on the transfer in short draught shuttles. Loops over the top of the eye, or over the whole eye, will pull off and re-thread without breaking back.

Quick, easy, positive threading is inevitable as the result of these improvements. This means more production, better cloth, and satisfied weavers.

The special U S developed features of open eye for soft filling, medium tension for rayon or regular cotton counts, and heavy tension for worsted or hard-twisted filling, are retained in this improved eye. Like the reliable U S Automatic, it will run any kind or count of filling,— cotton, rayon, worsted, wool, or jute.

Send for a sample

WE will gladly send you a U S Shuttle, equipped with the D. Automatic Eye, so you can test it and see how efficiently it operates. Simply send us one of your shuttles, together with a bobbin of the coarsest filling you use, or write to our Providence Office or nearest representative and one of our service men will call and take the measurements.

U S Bobbin & Shuttle Co.

Providence, R. I.

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M. OUSLEY,
12 E. Stone Ave.,
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For Pa., Md., and N. J.
DAN O'HARA,
248 Chestnut St.,
Philadelphia, Pa.

An Old Timer Says

In working with zest and giving his best,
Just for the pleasure of the giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

When an overseer or superintendent works merely for the wages or salary he receives, his work is a grind; but when he works for the sake of the real service he can give, then the work is a pleasure.

* * *

There are two things essential to success, knowledge and practical experience—and there are two ways of securing those things.

One way is to drift along with the crowd, picking up knowledge and experience by coming in contact with the work and with capable men.

This is the way of least resistance; it is the way the great majority of overseers and superintendents get it; it is also a fact that the majority of men draw the *average* salary—a salary about the same as the majority of overseers draw.

In fact, this plan or method of obtaining knowledge and experience might be termed the lazy man's method.

Let me tell you brother that the old world is getting so it turns around too darn fast for the foregoing method to get you anywhere.

The second way, for the man who expects to rise above the average, to get knowledge and experience is to follow a systematic course of study and constructive reading with the added advantage of personal service and contact.

The overseer or superintendent who adopts such a course will soon rise above the average mill man because there is a greater demand for the $10,000 man than there is for the $4,000 or $5,000 man.

Understand, I say there is a greater demand—I did not say there were more $10,000 jobs than $5,000 jobs, but the thought I am trying to convey is that there are so few $10,000 men for the few $10,000 jobs that the $10,000 job is harder to fill.

Have you got the backbone to go after one of the big jobs?

Just remember that if you have, "Old Timer" is here to tell you that the job is waiting.

* * *

One day I went out to water the lawn, and as very little water came out of the hose I first thought some one else had a valve open on the line, so I stood there and waited. As long as I waited the water came no faster. Then I had the very bright thought that I had better move and see what was wrong, and confound if I wasn't standing on the infernal hose.

Move brother! Move! You are standing on the hose—there is just plenty of water (good jobs) in the tank but you must find out what's wrong with your hose. Move! Start a systematic course of study.

* * *

Had you ever thought what a wonderful book (note book) you would have if you had started when you first went to work in the mill and made a note of every important thing that your experience has taught you? Every mistake that you made and how you finally found a way out of it? Every change you ever saw made in the mill, or on any machine, that taught you something you had not known before—

Gosh! Money could not buy that book if you had it.

Well my friend, that time is gone and there is no way to get it back, but if such a book of experience would be so very valuable that you would not sell it for any reasonable amount of money why in Sam Hill don't you start one now—you don't expect to die tomorrow do you?

* * *

There are a great many overseers and superintendents who have risen in the mill to very nice positions and have stopped there because they have neglected to acquire the education which alone would qualify them to mingle on terms of equality with bigger men.

This is a very regrettable fact. You know just such men. You see them all around you where mill men congregate. They have got the experience—the manufacturing brains, so to speak, to carry them on up to higher positions, but they lack just enough education to hold them right where they are.

Don't misunderstand me—I certainly mean no disrespect in making the foregoing remarks. Some of my very best friends are of the type of men I refer to—they just simply haven't waked up to the fact that it is no trouble to get that refined education they need so badly.

If the shoe fits your foot brother don't be discouraged in the least—start. Go to some well educated man and ask his advice as to the literature, books, etc., you should study and then start a systematic course of study. You will enjoy it if you really want to learn.

Get the good wife interested. Do everything in your home and at your meals just like you had the president of the mill to dinner with you—it will be good training for you and yours—it will be a wonderful example for your children.

Control in Business

Control is the brain of business in action. Stability and progress depend upon it. As it is intelligent so it dominates. Organization, System, Method are hopeless without it. And control is hopeless and worthless, unless founded on, and continually supported by, accurate and usable knowledge based on timely facts and figures.

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HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Wishes to Waterproof Raw Stock Dyed Cotton

Editor Cotton:

I should like to know of some waterproofing agent which could be put onto raw stock dyed cotton so that the yarn would be waterproof when it comes off the spinning frame and which would not affect the running qualities. This waterproofing agent is to be used both on sulphur and indanthrene dyed raw stock.

In all our experiments so far, anything we put on to neutralize the absorbent qualities of the fibers has caused very bad running on the cards and drawing frames. It seems to fill the cotton with static electricity.

Contributor No. 1119.

What Are the Limitations of Break Draft?

Editor Cotton:

While so many people are all worked up over the matter of long-draft spinning, I wonder if many, or any, persons have attempted what is being done at a certain mill of my acquaintance. They have spun 60s yarn with a draft of 19 on a system of their own that requires nothing but a resetting of the draft gears.

I saw some of this yarn, and it looked as good on a board as any yarn I have seen from the commercial long-draft systems. And it cost nothing to install, except the trivial costs of a few new gears.

This brings up a point that has interested me for a long time, and to which I have never had a satisfactory answer, that is, why is the break-draft on a frame always a negligible quantity? The break-draft varies slightly with different makes of frame, but it never amounts to anything. I have asked a great many people why this is, but have never had an answer that sounded like it meant anything. The usual reason was that it had always been that way.

If a draft of ten to twelve is practicable between the middle and the front roll, why is it not equally practicable to draft two, or two and a half between the back and middle rolls? I remember talking with a superintendent about two years ago, who had increased his break draft considerably, and had gotten away with it, but it seems like it was up to about 1.50 .

These two men are the only ones I have ever heard of tampering with the long-established settings for the break draft, and if any of your readers have made experiments along this line, this would be a good opportunity to air them. If one mill can make good yarn with a draft of 19, and without any accessories applied to the frame, it would seem that there are possibilities in the regular spinning frame that have not been properly explored.

Furthermore, if longer drafts can be obtained satisfactorily at the spinning frame by changing the break draft, it would be possible to change the whole process of drawing and roving, and give rise to any number of interesting developments.

Contributor No. 326.

Filling Sloughs in the Loom.

Editor Cotton:

I should like very much to have some of the weavers or spinners tell me, through the "How Other Men Manage" department, what to do to prevent ropy or sloughy filling. I am making 2.75 to 14s filling, 1⅞ to 2¼-inch stroke, 1⅝-inch ring with standard twist and speed. I am running travelers so heavy that the ends break very badly on full doff. It seems that 6s are worse than any of my other numbers about roping or sloughing in the cloth. Sometimes the cloth will show two to four doublings (I scarcely see how it passes through the shuttle eye). Will the loom cause any of this trouble? If so, please state the different causes to be looked after, on the looms as well as the spinning frames.

A. E. (Ga.)

A Doffing System.

Editor Cotton:

Some mills pay the doffers by the hour rate; some pay by the rate per hank as registered by the hank clock; and some pay by the side or frame rate. Some doff on pin boards, taking off the empty bobbin as the full one is put on. Others doff into small boxes or baskets and still others into trucks, holding four frames or more.

Some mills having but two numbers of yarn use a filling bobbin for one and a warp bobbin for the other. Mills having a varied number of yarns and cottons use bobbins with different colored tips denoting the number and kind of yarn being run on that particular bobbin at the time. Where this method is used and there are several numbers of yarn being run it requires a large amount of bobbins in order to keep one color for each yarn. If the supply is not adequate and two, three or more colors are forced to be used and they are also being used on some other number, there is sometimes a mixup of yarns. One cannot always depend on the doffers using chalk. A number of mills have a doffer on each side of the frame; others have two or more on each side, but there is usually some dissatis-

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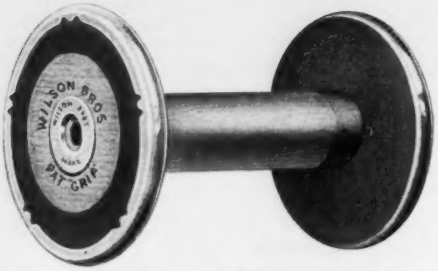

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faction among the doffers; either they can't be matched up or one won't keep his end up, etc.

The best method, in the writer's opinion, is where a doffer doffs the whole frame alone, and is paid a certain price per frame, there is less friction between doffers and better results are obtained where it is up to the individual. The doffer doffs the whole frame of bobbins into a canvas basket or light wooden box, (and this does not require any colored tipped bobbins).

When the doffer has finished doffing his frame he places on a bobbin a colored ticket bearing the number and the kind of yarn; the colored ticket also shows the kind

1 59 X a M	2 50 CP L	3 44 CP M	4 45 CP M
5 40 CE M	6 40 CE M	7 45 CP L	8 45 CP L
9 50 CP L	10 50 CP L	11 55 X a M	12 58 CP M
13 50 CP BLEACH	14 49 CP G and M	15 49 CP G and M	16 58 CP M

of cotton. There is also a ticket bearing the number of the frame, such as: 39 C.P.M. Frame 50. This will go to the weigher, who will mark on the yarn ticket the weight of the yarn in the basket with the number of the frame and where it came from. The weigher will check the frame ticket to the doffers' credit, as he gets a certain price per doff. The weigher as he weighs the basket will compare the ticket with a square on a black board representing that frame, which will have on it the kind of yarn being run, (see sketch). As he does this he will catch any mistakes the doffer might make by putting on the wrong ticket. If the ticket and board do not correspond he should hold the doff for investigation. If the frame is to be changed the last doff of yarn on the number running will also carry a slip stating that the frame is changed from say, 39 C. P. M. to 50 X. A. M., when the weigher will change the number in square on the blackboard.

After the yarn is weighed it will be taken either to the winding or spooling room and the winder or spooler tender will be paid for the pounds of yarn marked on the yarn ticket, according to the price paid for any particular number of yarn. C. L. (MASS.)

The Effect of Excess Speed on Fly Frames.

EDITOR COTTON:

Personal efficiency is to think rightly. In my opinion some of the contributors to this department lack personal efficiency. They disagree with me when I state that the poker bar or anything else offering any resistance to the carriage will cause slack. However, such is the case. I have already proven that the cone belt drives the carriage; on that point there can be no argument. We have two speeds on all fly frames, one is the equal speed and the second the excess speed. They are separated at all times, so that during winding the cone belt must do the driving of the train to the bobbins and carriage. Therefore, a tight spindle, dry lifting shaft or slides, dirty bobbin gears, dry bobbin gears, etc., will offer resistance to the cone belt which has too much to do on any bobbin-lead fly frame even when conditions are perfect. Please be reminded that the construction of the cones (concave and convex) is the tell-tale of a slipping cone belt.

It will be remembered that sometime around fifteen years ago, a Spaniard by the name of Casablancas, invented a device that would draw an inch of stock to seventy inches. He was laughed at, and his device did not meet with immediate success, but it did set others to working on the principle, but in a different way. Now we know that drawing between 40 and 50 inches is a success for certain kinds of goods. For instance, on all goods where the filling predominates, this amount of draft will be successful. So then we will have two methods of carding in the near future. In the fine goods mills, the practice of doubling at every opportunity will continue, while on all goods where the filling predominates, fine speeders will be found in the equipment.

In a cotton mill the problem of success is largely a problem of how to operate. The high speed of machinery is the cause for the deplorable conditions found in many cotton mills. For instance, in some mills the fly frame spindles are made to revolve anywhere from 1100 to 1600 revolutions per minute. It should be clearly realized that a high speed on any fly frame affects the outlines of the cones, called the intermediate speeds.

All practical speeder men know the theory of the flyer, that is, they know that the presser rod attached to the hollow leg of the flyer is made heavy, and at the same time at the greatest distance from the spindle, so that when the spindle is made to revolve, the heavy rod will constantly have a tendency to fly outward, which causes the palm or presser finger to exert a slight continuous pressure on the surface of the bobbin. This part of the flyer has an important bearing on the hardness or softness of the bobbin that is made.

We all admit that atmospheric conditions do affect the build of the bobbin, which is caused by the humidity finding its way in the hollow leg of the flyer, and causes the surface over which the strand passes to offer a slight resistance to its passage, which in turn causes more pressure on the surface of the bobbin. In such a case the increasing diameter of the bobbin is slightly reduced at each layer, which causes the tension to run slack on heavy days. Thus, the rack gear must be changed, which remedies the tension for the time being, and no more trouble is experienced until atmospheric conditions change again.

The high speed on a fly frame acts as in the foregoing case, only the trouble cannot be regulated by the rack gear because, as stated, the outline of the cones are affected.

When the presser finger or palm is resting on the bobbin at the beginning of the set, if the flyer be examined, it will be found that the presser rod occupies its greatest outward position, which, of course, combined with its high

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velocity, causes the greatest pressure at the beginning of the bobbin. When the bobbin is filled, if the flyer be examined, the presser rod will be found to occupy a position almost directly behind the hollow leg of the flyer. From this it should be seen that the high speed does not affect the pressure on the surface of the bobbin as much when the bobbin is nearly full or filled.

Again, it should be seen that changing the rack gear will not remedy such a condition, because a rack gear that would suit the diameter of the bobbin at the start would cause the tension to be too tight when nearly full, owing to the pressure decreasing as the bobbin diameter increases, which is the reason that more trouble is found in mills where machines are run at a maximum speed.

Add the amount of extra breakage and the reason is found why a larger production can be turned off with a lower or standard speed. The foregoing is also the reason why the American cones have a different outline from the English cones, English machinery being lower speeded.

Next, let us consider Contributor No. 4309. Does he lack personal efficiency. I'll say so! And for his benefit I will outline personal efficiency. He should fix firmly in his mind what he would like to do, then without varience of direction, move straight to the goal. He shou'd keep his mind on the great and splendid things he would like to do, and then as the days go gliding by he will find himself unconsciously seizing upon the opportunities that are required for the fulfillment of his desire. He should picture in his mind the able, earnest, useful person he desires to be, and the thought he holds will be hourly transforming him into that particular individual. WASH (R. I.)

Finding the Causes for Broken Ends.

EDITOR COTTON:

At a meeting of the carding division of the Southern Textile Association some time ago, a member asked for information with reference to the breakage of ends in roving and spinning in terms of the number of broken ends per hundred spindles per hour.

There was some discussion, but no one seemed to have very much complete information on this point, and, you recall, the chairman asked the men present, and those reading the reports of the meeting, to make such tests as a matter of information.

Subsequent to that discussion, we went into this point very thoroughly, and conducted some extensive tests. We compiled a report covering one hour per week for twelve weeks, in order to detect and average up any variation in the different grades of cotton or as a result of weather conditions changing. We thought that this was the best procedure.

SPEEDER END BREAKAGE

DIVISION
DATE
HANK ROVING 6.10 & 7.00
FILLING
WARP
CHECKER

8 Breaks per hundred spindles per hour
BREAKS PER SPEEDER PER DAY

NO. OF SHEET
START
STOP
HOURS RUN 12
NO. SPINDLES 6,636 (553 pr.hr.)
SPEEDER HOURS

CAUSES	NUMBES OF BREAKS	ENDS CAUSED BY OTHER BREAKS	TOTAL	PER CENT
UNCLASSIFIED			50	78.12
NEPS FROM PREVIOUS PROCESS				
SINGLE ROVING			4	6.25
DOUBLE ROVING			1	1.56
ROVING BROKEN BACK			1	1.56
ROVING RUN-OUT				
HARD ENDS			5	7.81
ROVING OUT OF GUIDES				
CHOKED TRUMPETS			2	3.13
CHOKED CLEARER				
BAD ROLLS				
LAPPED ROLLS			1	1.56
FLYING LINT				
CHOKED FLYERS				
ROVING OUT OF PRESSES				
TENSION				
CAUSED BY BUILD OF BOBBIN				
JUMPING BOBBIN GEAR				
BAD RUNNING SPINDLE				
TOTAL			64	100%

SPINNING END BREAKAGE

MILL
TEST NO.
YARN NO.
FILLING
WARP 30s

5 Breaks per hundred spindles per hour

NO OF SHEET
CHECKER
DATE
HOURS RUN 12
NO SPINDLES 11,520 (960 pr hr.

CAUSES	NUMBER OF BREAKS	ENDS CAUSED BY OTHER ENDS	TOTAL	%
UNCLASSIFIED			357	53.36
ROVING RUN OUT			3	.45
ROVING BROKEN BACK			35	5.23
BUNCHES IN ROVING			30	4.48
SINGLINGS			14	2.09
ROVING RUN TO OUTSIDE OF ROLL				
HARD ENDS			63	9.41
ENDS CAUSED BY HARD ENDS			17	2.54
ROVING OUT OF GUIDE				
LINT IN TRUMPETS			2	.30
STEEL ROLL LAP			10	1.50
TOP ROLL LAP			3	.45
BAD TOP ROLL			3	.45
DRY TOP ROLLS				
FLYING LINT				
DURING CLEANING				
SWEEPING ETC			2	.30
TOP CLEARER WASTE				
TRAVELERS OFF				
TRAVELERS WORN				
LINT ON TRAVELERS			10	1.50
SLACK BANDS				
BANDS OFF			1	.15
BAD BOBBINS			10	1.50
MECHANICALLY BAD SPINDLES			3	.45
(OUT OF PLUMB-SHAKY)				
BROKEN BY OPERATOR				
BROKEN IN CLEANING				
ENDS DOWN AT DOFFING			106	15.84
		Total	669	100%

Our findings at the completion of the twelve-weeks' tests are shown on the filled-out forms which accompany this article.

I am sending this to you in the thought that our results will be of interest to other readers of COTTON, and also in the hope that they may induce still others to make tests along this line and send you their findings in order that we may all make comparisons as a matter of record. Also, others who have not gone into this may find the form we use for recording these tests of help.

It will be noted from the "Speeder End Breakage" report, that making 6.10 and 7.00-hank roving, our breakage averaged eight breaks per hundred spindles per hour. This was on the basis of 6,636 spindles run for twelve hours, as stated, or a total of 553 spindles per hour.

By using the type of form shown, it is possible to analyze the causes of some of the ends breaking down. In the case of the speeders, as will be noted, a majority were unclassified, yet the different kinds of causes shown at the bottom of the sheet can be studied as to their relative importance, giving the man in charge a "lead" as to where his troubles are coming from.

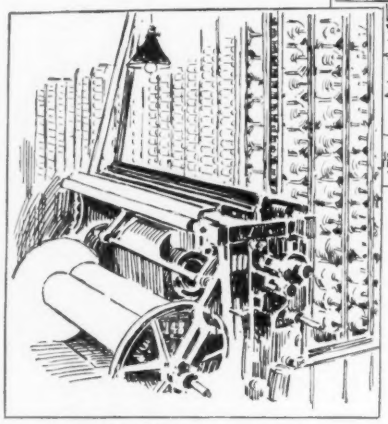
On the 30s warp yarn in spinning, our end breakage averaged five breaks per hundred spindles per hour, on the basis of 11,520 spindles run for twelve hours. Using the total of 669 ends down as 100 per cent, it will be noticed that 15.84 per cent, or 106 ends were "Ends Down at Doffing." The next highest single cause was "Hard Ends," causing 63 breaks, or 9.41 per cent of the total. Next comes broken back roving, with a total of 35 ends or 5.23

Mailing color specifications for yarn already in hands of Franklin Process Company.

How the "Speedy" system operates

Speedy Dyeing for Speedier Production

Dyeing yarn from stock wound on Franklin packages.



Franklin packages in creel at mill.

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SPINNING END BREAKAGE

MILL
TEST NO.
YARN NO.
FILLING 40s
WARP

8 Breaks per hundred spindles per hour

NO. OF SHEET
CHECKER
DATE
HOURS RUN 12
NO. SPINDLES 9,984 (832 pr hr)

CAUSES	NUMBER OF BREAKS	ENDS CAUSED BY OTHER ENDS	TOTAL	%
UNCLASSIFIED			609	61.27
ROVING RUN OUT			1	.10
ROVING BROKEN BACK			67	6.74
BUNCHES IN ROVING			12	1.27
SINGLINGS			19	1.91
ROVING RUN TO OUTSIDE OF ROLL				
HARD ENDS			18	1.81
ENDS CAUSED BY HARD ENDS			7	.71
ROVING OUT OF GUIDE				
LINT IN TRUMPETS				
STEEL ROLL LAP			11	1.11
TOP ROLL LAP			8	.80
BAD TOP ROLL			4	.40
DRY TOP ROLLS				
FLYING LINT			5	.50
" " DURING CLEANING				
SWEEPING ETC			5	.50
TOP CLEARER WASTE				
TRAVELERS OFF			3	.30
TRAVELERS WORN				
LINT ON TRAVELERS			6	.60
SLACK BANDS			1	.10
BANDS OFF			13	1.30
BAD BOBBINS			3	.30
MECHANICALLY BAD SPINDLES			2	.20
" (OUT OF PLUMB SHAKY)			1	.10
BROKEN BY OPERATOR			8	.80
BROKEN IN CLEANING			4	.40
ENDS DOWN AT DOFFING			187	18.70
		Total	994	100%

per cent. Of the 669 ends down, there were 312, or 46.64 per cent, classified.

We spin 40s filling, and on this number, on 9,984 spindles, our average was eight breaks per hundred spindles per hour. The total for the twelve hours was 994 ends down, of which 385, or 38.73 per cent, were classified. Here again, "Ends Down at Doffing" naturally show up the largest single offender, with 187 ends or 18.70 per cent of the 994 ends down, while broken back roving comes next with 67 ends or 6.74 per cent. Hard ends on this yarn drop down to 1.81 per cent, or 18 ends.

By studying the tables shown, your readers can make their own comparisons between the various causes and the percentage they resulted in, as well as between the warp and filling yarn. Of course, local conditions at my plant will result in certain causes doing more damage with me than the same ones would at another mill, and vice versa. Therefore, this makes my own report more valuable for me than for anyone else, and yet at the same time I am sure your readers can each see what it would mean if they could have this kind of a report for their own mills, as it would afford them a check-up on conditions and the major causes for each mill's troubles.

In addition to the roving and yarn breakages, we carried the tests one step further to determine the percentage of loom stoppage and the various causes therefor. This test was conducted in a similar manner, that is, running 600 *looms* an hour a week for twelve weeks. We found, as the report shows, that our loom stoppage averages 3.5 breaks per 100 looms per hour, the total being 351 stops.

The analysis of the different causes of these stops is interesting and valuable. It will be noticed that weak

3.5 Breaks per 100 looms per hour

LOOM STOPPAGE

Total Looms for 3 months - 600 Total Hours run - 12

(50 looms per hour.)

		TOTAL	%
WEAK THREADS	Body	96	27.35
	Selvage	2	.57
TIE BACK	Body	29	8.26
	Selvage		
ENDS COMING UP	Body	18	5.13
	Selvage	2	.57
LINT		21	5.98
SPUN IN		16	4.56
WILD YARN		1	.28
KNOTS		23	6.55
KINKS		101	28.77
SLACK THREADS	Body	6	1.71
	Selvage		
MISCELLANEOUS		17	4.84
TOTAL			
FILLING STOPS		3	.86
MECHANICAL STOPS		16	4.56
TOTAL		351	100%

threads in the body caused 96 stops, or 27.35 per cent of the total of 351 stops. The other large offender was "kinks" causing 101 breaks, or 28.77 per cent of the whole. These stops are classified more in detail, only 17 out of the total going under the head of "miscellaneous" or unclassified stops.

I trust these reports will be of interest to your readers. I honestly believe, if they will go into the matter, that they will find it helpful, as I did. And should they make such tests, whether in this form or not, I would certainly be interested to see their results if they will send them in to COTTON. CONTRIBUTOR NO. 4469.

Discussing the Combing Question.

EDITOR COTTON:

I am very sorry to advise that "Jock, (Mass.)," has not convinced me that a comber half lap leaves more than 50 per cent of the combing for the top comb to do, for that was the original contention which has led to a general analysis of a combers action. Jock is very anxious for me to admit that I am wrong and I shall be very glad to admit it and thank him for enlightening me if he can, but as yet he has proved nothing to me and has not disproved my explanation.

I realize what he is driving at when he says that an individual fiber cannot be used to illustrate a comber's action, but I take exception to that. The slippage of fibers through the nippers caused by the cushion of a bulk of cotton is an indeterminate amount and while we all know it exists, still it cannot be held up as an explanation of the principle of combing. If that explanation held, there would be no need of opening the settings of a comber for longer staple cotton, for the fiber would slip through anyway.

On the contrary to what "Jock" says, one fiber is the proper thing to consider to understand the comber. I fully realize it would be an impossibility to comb one fiber owing to the fineness of its diameter, therefore the nippers could not be set tight enough to grip one fiber without pads and then the fiber would be lost, but in the fringe of millions of fibers which are presented and which form a cushion, it certainly is the individual fiber which must be pictured in one's mind, otherwise, all settings are the bunk. I will admit right here that there are many fibers which slip through the nippers, when the detaching roll moves forward in its piecing up motion, but this is a thing which should be reduced to a minimum, and, if it were mechani-

cally and practically possible, should be eliminated entirely. "Jock" will have to admit that he would not set a comber by this slippage, but rather by the average length of staple which he was running.

Before I go through my past explanations in Cotton, let me make a suggestion as to wherein I think "Jock" is being misled. If the beats per inch that a picker was making was desired, how would it be obtained? Would the r.p.m. of the beater be divided by the inches of lap fed, or the inches of lap delivered? Using the ideas "Jock" advances the r.p.m. of the feed rolls would be useless, because the fibers would slip through owing to the great bulk of the cotton. I think he will find, however, that *most* men will divide the r.p.m of the beater, times the number of blades, by the r.p.m. of the feed rolls, times their circumference in inches. They will ignore the inches delivered at the front in their calculations for that is not what is wanted. The beats per inch means the number of times the beater strikes one inch of cotton, and it strikes just what comes through the feed rolls, and not the delivery rolls.

Now we will move to the card. If he were figuring the number of imes the licker-in teeth pass through the fibers, he would not use the inches delivered in the can or from the doffer, but would use the amount of lap fed over the feed plate. I know he is going to admit this much, but he is smiling and saying, "That bird thinks a picker or a card is a comber." No, but I am simply giving "Jock" an example to show that the beats or combs or nips is figured by the inches fed and not by the inches delivered.

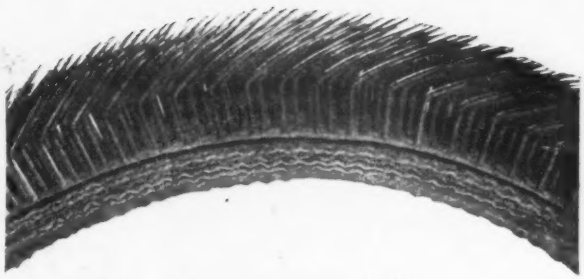
Now jump to the comber. "Jock's" idea is that the detaching roll and segment exert a pull on the fibers which pulls them away from the bulk and from the bite of the nippers and feed rolls. What is the detaching motion for? "Jock" has explained that, when he says it is to piece up the end which was broken in combing. That is just what it is for. This motion does not jump back and grab the ends of fibers and snatch them away from the bite of the nippers, as "Jock" says. It merely pieces up the end broken in combing. The reason for this motion, is to keep the fibers parallel to each other as they have been laid by the combing action of the half-lap. If it were not essential to have the fibers parallel in after processes, the comber could be built differently and the detaching motion eliminated entirely.

It rolls back a short length of the fibers previously combed, upon which is laid the tip ends of the fibers which were finished combing at the last turn of the half-lap, and then rolls forward a longer distance than it has turned backwards as "Jock" says. I said the fibers were laid onto the fringe of previously combed fibers and that is correct.

I would like to ask what he considers a good draft on a comber, and where the greatest draft occurs. A little thought on this line will explain why the detaching motion delivers such a great length as compared to the length fed by the feed rolls.

"Jock" cannot understand my paragraph 7 wherein I said, "The fibers are not all advancing evenly: some are almost ready to be gripped by the detaching rolls, while some are just starting into the path of the half-lap before they can be pulled out of the bulk of the lap behind them." I will present here a diagram in the hope that a picture will show this more clearly.

Theoretically, it figures that the half-lap should pass through each fiber six times and therefore I have shown



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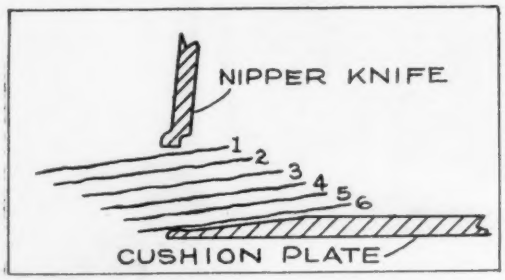
six fibers as they lay coming through the nippers. If there were 1,000,000 fibers in the fringe of cotton at the nippers, 166,666 would be in the position of the top fiber in this diagram, and 166,666 in the position of the second, etc. At each movement of the detaching motion or on each nip 166,666 fibers would be carried forward and pieced up. These 166,666 fibers would be acted on as the individual fiber which I illustrated in my previous article. I never have counted the fibers and as they are all treated as one, I used one individual for an illustration. If "Jock" has counted them and objects to the 166,666 on each nip, I will grant his objection, as I don't care whether 10 or 10,000 are acted on at each nip. If any fibers are not parallel to the mass and were laid crosswise I would say that the detaching motion might carry them as far as the top comb, but all combed work is prepared for the comber by being drawn so that the fibers are parallel.

The whole argument simmers down to the question of whether the detaching motion grabs the fibers and pulls



them away from the nippers, or whether it has the fibers fed to it as my combers are set to do.

Paragraph four is all right in explanation and "Jock" says the leather detaching roll and segment grip the tip end of the fibers, which is correct. But if he will figure from his settings he will find that the tip end of the fringe will have about 1/6 of the fibers advanced far enough to be gripped. The other 5/6 will not reach to the bite of the roll and segment. As the fibers are all parallel the 1/6 that are gripped should be easily detached from the remainder, without dragging many fibers with them. There are a few no doubt that slip through, but they are very few.

Now let us look at the question of the draft. We will say that the lap is 550 grains and the sliver delivered at the calender rolls on the table is 50 grains. Consider one head only. This gives a draft of 11. Now suppose we were to set a ribbon lapper so that any two rolls were an equal distance to our comber settings, that is, from the bite of the leather detaching roll to the feed rolls, and then give it a draft of 11 at this point. What kind of a web would be made at the front? Think about that. Doesn't that prove conclusively that the fibers are combed away from the feed rolls or nippers and not drafted away as "Jock" seems to believe?

One more point before we leave. If "Jock" had to have either the top combs or the half laps removed, which would he rather lose? I have never run a comber without half laps, but I have tried throwing the top combs back and I could run the machine and comb out lots of short fibers. I do not think I could run without the half lap but with the top comb only. If the top comb did the greater part of the combing this experiment would be possible.

Now regarding the dyed fiber experiment. I have plenty of colored raw stock and can send fibers in any color that "Jock" may desire. I would suggest that he put one individual black fiber on his lap at the feed rolls, just entering the bite, and parallel to the other fibers, and then turn his comber by hand counting the number of nips it takes to get that fiber through the delivery rolls, and then give us a report.

"Jock" has asked me if I knew what a nip was as applied to a comber and I will say that I have been told before that it was one complete revolution of the index wheel and I believe it.

As far as stating what a comber was built for, I will admit that my opinion may vary from other mill men, as combers are expected to do some peculiar things in some mills. Every agent, superintendent or overseer has different combing theories, and "Jock" must have had an interesting time listening to some of the controversies. Combers will do half the card's work if they have to, but I am of the opinion that the comber was originally intended to do things that a card could not do.

In my previous article I made no slip of the pen and simply stated the action of a comber as I know it. I cannot say that the half lap combs more than 50 per cent of the fiber. While all such figures are theoretical, I am willing to believe that the half lap combs 90 per cent.

Other comber men must have opinions along this line, and it would be interesting to hear from them.

M. W. H. (MASS.)

Crepe Yarn.

EDITOR COTTON:

This is in response to the inquiry from one of your readers with reference to 50s crepe yarn.

In regard to the standard or most popular twist for 50s/1 combed peeler crepe warp yarn, will say that so far as our mill is concerned, we have found that a multiple of 7.25 is best for this yarn and we use this on a large production of this material all of the time. I do not think it a good idea to try to use too much twist in this class of yarn. On some 20s I have used a multiple of 10, but on the finer number I think the 7.25 multiple is sufficient.

As to sizing, my policy is to size the crepe yarn lighter than the regular yarn, with everything the same except a lighter mixture. I do not think a heavy size mix will go into the crepe yarn.

R. R. W. (S. C.)

EDITOR COTTON:

In reply to the question submitted by "Contributor No. 5541" in the August number, I cannot do better than relate a few facts obtained from my experience in running a small order of 1500 pieces of Rayon-filled crepe.

This particular fabric was woven of single 36s crepe warp, carded, and 150 denier rayon filling. In determining the correct number of turns to the inch in the warp I multiplied the square root of the counts by the constant, 3.75, times two:

$\sqrt{36} \times 3.75 \times 2 = 45$ turns per inch.

However, in the inquirer's case the constant for combed peeler is 3.6, and the calculation:

$\sqrt{50} \times 3.6 \times 2 = 51$ turns per inch (very nearly).

Regarding the number of looms per weaver, in my case

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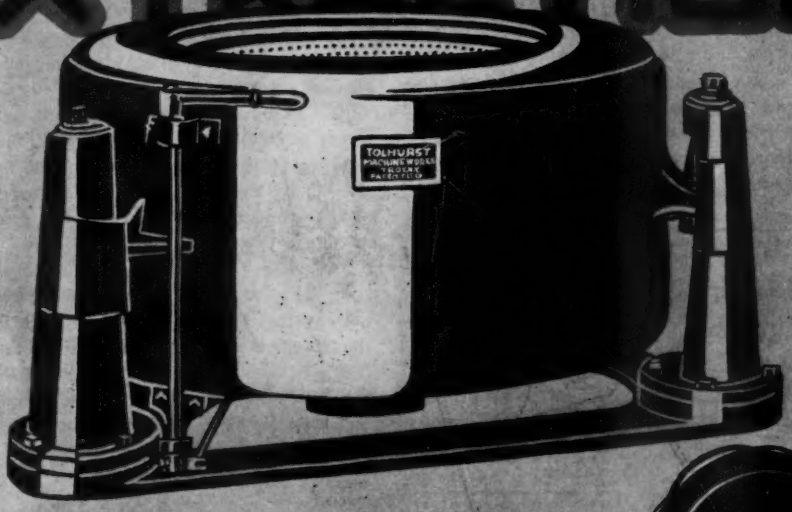

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the weavers ran four looms on this crepe in conjunction with eight looms on another type of fabric.

In sizing crepe warps it has been my experience that a fairly heavy size is best, but care should be taken that the size is not so heavy that the sheet tapes or rolls up after leaving the size vat.

Contributor No. 259.

The Chapon Spinning Frame.

Editor Cotton:

I have previously described the can spinning frame, and it is now my intention to describe the Chapon spinning frame. The can frame and the Chapon spinning frame have quite a good many points of resemblance to each other in general appearance and construction, in fact one who is unacquainted with both machines and their method of working may think that they are identical with each other. I shall show, or endeavor to show, however, that there is quite a difference both in principle, construction and operation. Both machines, it is true, have a special vogue and a capacity for spinning low numbers or waste yarns, say yarn counts to 4s. In both cases the cops are built up on the cone cop principle and in each case the cops are used as weft in such goods as cotton blankets. When used on cotton blankets or similar cotton goods this kind of filling gives us a very full appearance, in many respects superior to mule spun yarn. In each case is the cop formed in an iron cup upon a long internal spindle similar to the filling winding principle. The full length of the cop is got at by the diameter of the cup itself continually forcing both cop and spindle upwards and building the cop downwards. The finished cop is then drawn off the spindle which is lifted out for the purpose and is then replaced for the next cop.

For the Chapon frame and also for the can frame, cops like box shuttles are used in the looms without shuttle tongues, the cop being held in its place by the pressure, externally, of a light longitudinal board or rod, while the yarn itself is withdrawn from the inside and base of the cop, instead of from the nose or apex of the top of the cone and outside surface as is the usual case in most other cops found on other spinning machines or cone winders. Although the Chapon is a very simple machine, it is somewhat more complicated than the can frame because it has a somewhat greater scope than the can frame and is more ambitious. In the first place it possesses the advantage of using the full size condenser bobbins in its creel, just the same as a waste spinning condenser mule. Not only is the cone cup and the long loose spindle used for the winding and the shaping of the yarn into cop form, but they are also used for putting the twist into the yarn in the same way as is done in the other spinning machines.

It is also quite possible to make a Chapon frame in such a manner that the principle of roller drafting may be utilized and three pairs of rollers of a small diameter, say ¾-inch in diameter, may be used. It is not, however, the usual plan to so construct a Chapon spinning frame with drawing rollers for the purpose of spinning cotton waste yarns from condenser yarns any more than it is a common plan to construct a waste condenser mule with such rollers, and the passage of the yarn from the back bobbin to the front spindle is on much the same lines as the mule spinning process. If, for example, the usual long condenser bobbins, each containing probably from ten to sixteen

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strands which have been rubbed by the condenser rubbers into sufficient density and roundness to give satisfactory drawing off at the spinning frame, are placed on tin surface drums of about ten inches in diamer, they are thereby unwound at a uniform surface speed. It is quite possible that the width of the finishing carding engine may vary and that the condenser bobbins may also vary in accordance. In this case the creel of the Chapon may be constructed to agree to this, which is quite possible, but one must be arranged in relation to the other so both can run together. For example, a Chapon spinning frame is so constructed that it has 96 spindles in order to measure out for eight back bobbins, each holding twelve ends, or there might be 104 spindles to agree with eight long back bobbins, each containing thirteen good ends from the finisher card. Spaces are provided that hold the flanges of the long bobbins in the tin drum creel proper, and on this account in a great measure it has been found necessary that each condenser bobbin should be somewhat shorter than the total space that is taken up by the several spindles which one bobbin serves.

Usually the spindle gauge is about 3½ inches, while the can spinning frame has a gauge of 10½ inches, but it must be borne in mind that the latter is a two-sided machine, while the Chapon machine has only spindles on one side, so that the comparison is only as 7 to 10½. The duplicate can machine being wider than the Chapon. On this latter machine (i.e., the Chapon) there are generally two sizes of spindles used, the No. 1 size being used to make cops about 10 inches long and from 2 inches to 2½ inches in diameter, such as would be suitable for a low range of counts of yarn, say ½s up to 2s, counts with 840 yards per hank, as in ordinary cotton. For the finer range of counts made upon the Chapon machine, say 2s to 4s, the No. 2 spindle is used, with any length up to 8 or 9 inches, and a diameter of possibly 1¾ inches. Every strand of cotton roving is delivered at a uniform rate of speed from contact of the bobbin with the surface drums, and it then passes through a pair of positively driven conducting rollers, thence downwards to the eye of a suitable rotating guide, through a slit in the conical cup, and then upon a steel spindle passing down the center of the cup. The guides are given enough traverse along the length of the cone of yarn while the height of the cone cup remains constant, and the height of the spindle is being automatically increased by the thickness of the yarn in order to keep the cone part equal in diameter at all times and correct in height relatively to the cup and traverse. In order to prevent the yarn from flying outwards too much and at the same time to avoid the twining of the threads, it is usual to use very smooth blinker separators between the spindles.

We come now to the rotation of the guide curls and of the spindle itself it is well to say that this is a much more important business than it is on the can machine in which the twisting is done at the creel can itself, and both the spindle and cop wind and shape on the simplest plan just as on the filling winder, i.e., each spindle and cop drawing from its own can at a variable speed to suit the shape of the cone. There is a differential motion on the Chapon machine by which the bobbin or spindle and the guide curl ring are given different speeds in order to permit of winding and twisting to take place simulatenously, somewhat after the winding and twisting of roving on a bobbin and fly frame, but with easily seen differences in principle and construction, since on the Chapon frame the cotton is formed in a cop shape, and bobbin and the spindle form one piece in actual practice.

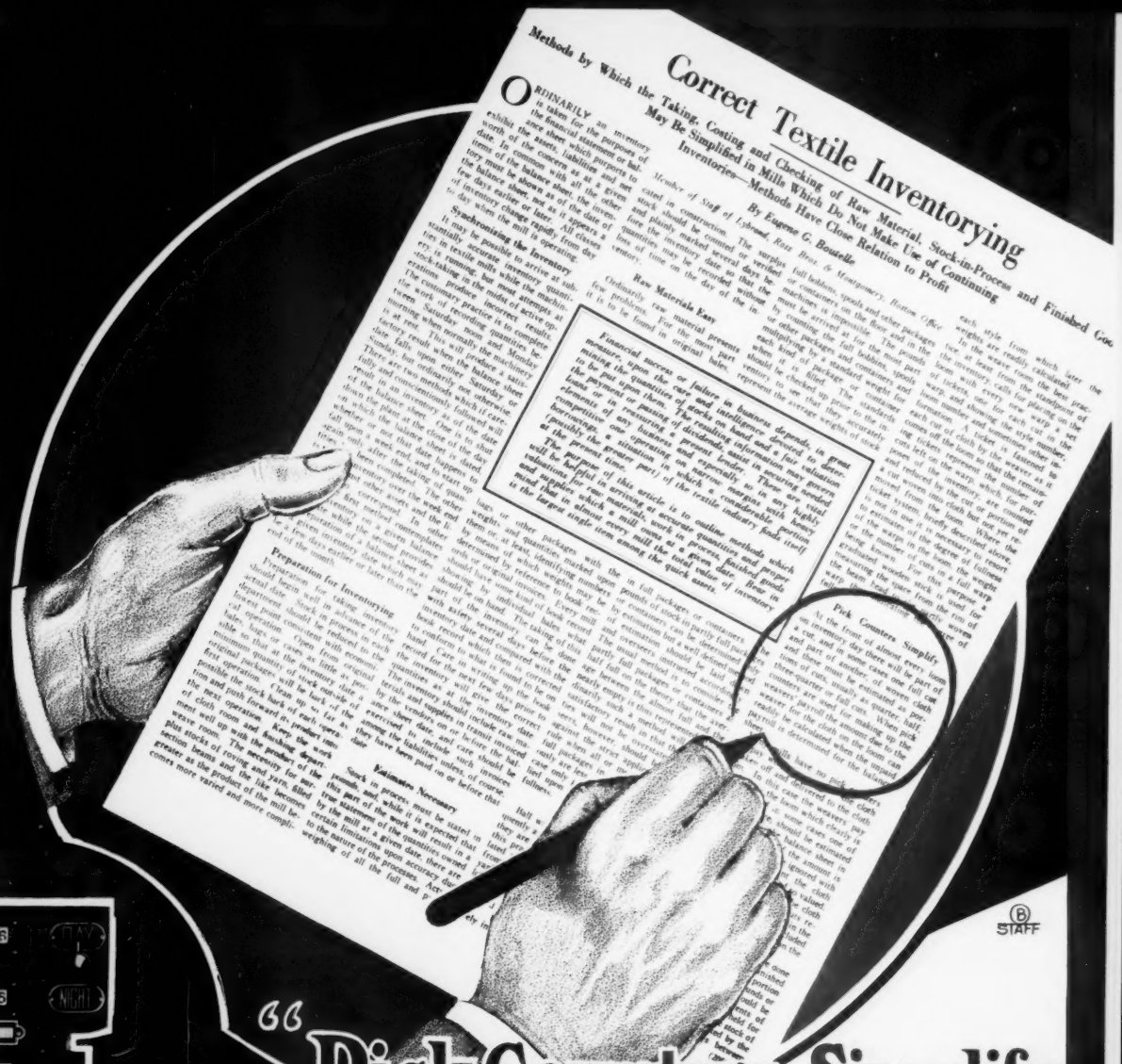
If the bobbin and the guide curl revolved at the same rate there would be twisting without winding, but each is definitely driven at a well proportioned speed, so as to give a sufficient twisting and an amount of winding proportioned and equalized to the delivery of the cotton, first by the tin surfaced drums at the back and then by the conducting rollers. From a cotton spinner's point of view a particularly novel kind of differential motion is provided in order to accommodate the positive speed of the cop to the uniform feed of the cotton from the back bobbin and to the varying diameter of the cop cone from apex to base.

On the ordinary filling winding frame the yarn is simply fed or drawn forward more rapidly when winding on the base of the cone of the cop than when winding on the apex, and the whole thing is simplicity itself. It is an entirely different thing on the Chapon machine, in which the yarn is given off the long back condenser bobbins at a uniform speed.

Assuming that winding has been made correct for winding on the apex of the cone of the cop when the lifter curls are in their lowest position, then, as the yarn is guided upward towards the base by the raising of the lifter, the winding speed increases proportionately to the greater diameter of the base. To compensate for the quicker winding-on rate the guide rollers are given a well proportioned downward movement towards the spindles, and this movement combined with the raising of the lifter curl wires gives the increase in length of yarn required by the greater diameter of the cop. In other words, a differential winding-on motion is provided by causing the lifter and guide rollers to move toward each other, and give slack yarn as the winding point moves toward the base of the cone, while these two parts recede from each other and tend to take up the yarn when the winding-on point moves toward the apex of the cone of the cop.

This differential winding-on problem is a distinctly interesting and valuable one, and the comparatively rapid crossing of the yarn along the cone not only facilitates the subsequently drawing of the yarn but also helps to distribute the twist in the yarn sufficiently. The spindle speeds may be proportioned to the counts of yarn required, but are always comparatively low, reaching 700 or 800 revolutions per minute for counts 1½s or 2s with the larger dimensions of cop as aforementioned, and up to 1300 or 1400 r.p.m. for 3s or 4s. It will be noted that both counts and spindle speeds for this Chapon spinning machine are very much on a par with those obtaining on a range of bobbin and fly frames for ordinary cotton spinning, including slubber, intermediate and roving frames. There is, however, a much higher range of twist per inch put into the yarn from the Chapon frame.

The production of this machine per spindle varies a great deal according to the class of waste used, the ability of the operatives and the twist per inch required, etc. This machine is used a good deal on the Continent of Europe. and is generally understood to give a good production of soft twist filling. The foregoing description of its working is given largely from continental sources and also from Thornley's "Cotton Waste" book.


Correct Textile Inventorying
Methods by Which the Taking, Costing and Checking of Raw Material, Stock-in-Process and Finished Goods May Be Simplified in Mills Which Do Not Make Use of Continuing Inventories—Methods Have Close Relation to Profit
By Eugene G. Boutelle
Member of Staff of Lybrand, Ross Bros. & Montgomery, Boston Office
Financial success or failure in business depends, in great measure, upon the care and intelligence devoted to determining the quantities of stock on hand and to valuation to be put upon them. The resulting information may assume the form of a balance sheet, a profit and loss statement or both. The preparation or passing of dividends, and in many cases the elements of any borrowing and present or prospective competitive conditions, a situation in which a considerable portion (possibly the greater part) of the textile industry finds itself at the present time.
The purpose of this article is to outline methods which will be helpful in arriving at accurate quantities and proper valuations for raw, in process, finished goods and supplies which every mill must control if it is to keep in mind that an almost every mill the stock values of inventory is the largest single item among the quick assets.
Ordinarily an inventory is taken for the purpose of exhibit the financial statement or balance sheet which purports to worth of the assets, liabilities and net date. In common with all of the given items of the balance sheet the inventory must be shown as of the date at which the balance sheet, not as it appears a few days earlier or later. All states of inventory changes rapidly from day to day when the mill is operating.
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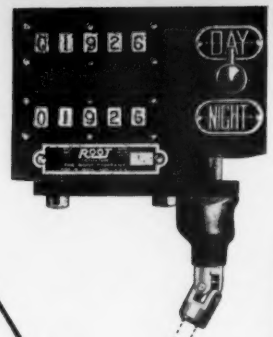

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3.54 American counts of yarn, 12 pounds per spindle
4.13 American counts of yarn, 9 pounds per spindle

I have now described two machines, both used for the spinning of cotton waste and both of which are used in place of the self acting mule, especially on counts of yarn of the lower numbers, i.e., from .5s to 5s. The can spinning frame as made by one or two makers and the Chapon spinning frame are used for spinning waste yarns—especially waste filling—on the Continent of Europe and less in England where they use mostly the self acting mule. But the foregoing are much simpler than the mules and are most easily attended and are more productive. The can frame is not made to secure draft and the Chapon frame is not usually built for this either.

W. B. (Maine.)

Sizing Crepe Yarn

Editor Cotton:

In the August, 1926, issue of Cotton I notice that "Contributor No. 5541" asks for information on crepe yarns, and will say that most mills are using 7¾ to 8 times the square regular and reverse twist in the warp, using 1¼ to 1 5/16-inch staple. A good staple is required for this work, and the number of looms to the weaver should be eight.

In regard to slashing crepe yarn in sets of six beam work, three beams of regular twist and three beams of reverse twist, it must be run on a two-box slasher with color in one box to distinguish the regular twist from the reverse twist yarn. There are some men, who, when beginning this work, run it as a two beam job, but the proper and most efficient method is to run one beam work.

Instead of running it on the slasher in a wide sheet as the ordinary work is run, dividers are placed in back of the size box so that the yarn goes over the cylinder in the form of tapes instead of one wide sheet across the cylinder. Running this over the large cylinders the reverse is kept separate from the regular by the lease rods in front of the cylinder until it passes through the reed onto the loom beam.

Particular attention must be given at the spinning room to prevent uneven twist caused by a slack band, which will injure the fabric.

I hope this information will help "Contributor No. 5541."

Rig. (Mass.)

Editor Cotton:

I note the question in the August issue of Cotton with reference to crepe yarn. The inquirer wanted to know the generally accepted twist for 50s/1 combed peeler crepe warp yarn; the number of looms per weaver using this warp and Canton filling; and any information as to slashing crepe warp.

As to the twist for 50s single crepe warp, we have found that 8 times the square root of the number is the best standard we can use. Some mills use more than this, but our experience is that it will not run good if there is more twist in it. Using this warp and Canton silk filling, our weavers have little trouble in handling six and eight looms each.

In regard to the sizing of crepe warp, this I consider the most important feature in running this type of warp, and perhaps I can give some helpful suggestions gained from a considerable experience along this line.

In the first place, it is essential to use two size boxes right behind the slasher. (I am assuming that the inquirer refers to crepe warp where two ends of regular twist and two of reverse twist are drawn-in together for the loom.) We run the white or regular twist yarn in the front size box, that is, the one nearer the slasher, and the reverse twist yarn, which is tinged or tinted, in the second size box. For tinting this yarn in order to distinguish the different twists after they are run together, we use Violamine RR. The reverse twist yarn is placed in the back size box so that it will be on top of the regular yarn at the front of the slasher, in accordance with the accepted practice of running the dyed yarn on top.

It is perfectly natural, with the heavy twist and light sley used in this warp, that the ends will run together in the size box, and roll together, and it is on this point where extreme care should be exercised all the way through. One

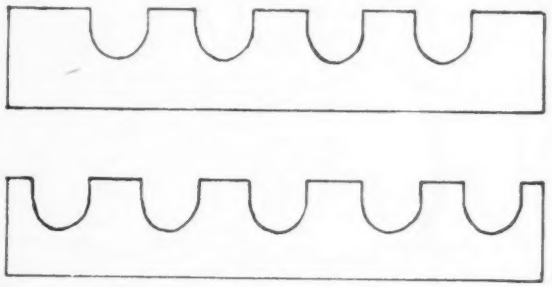
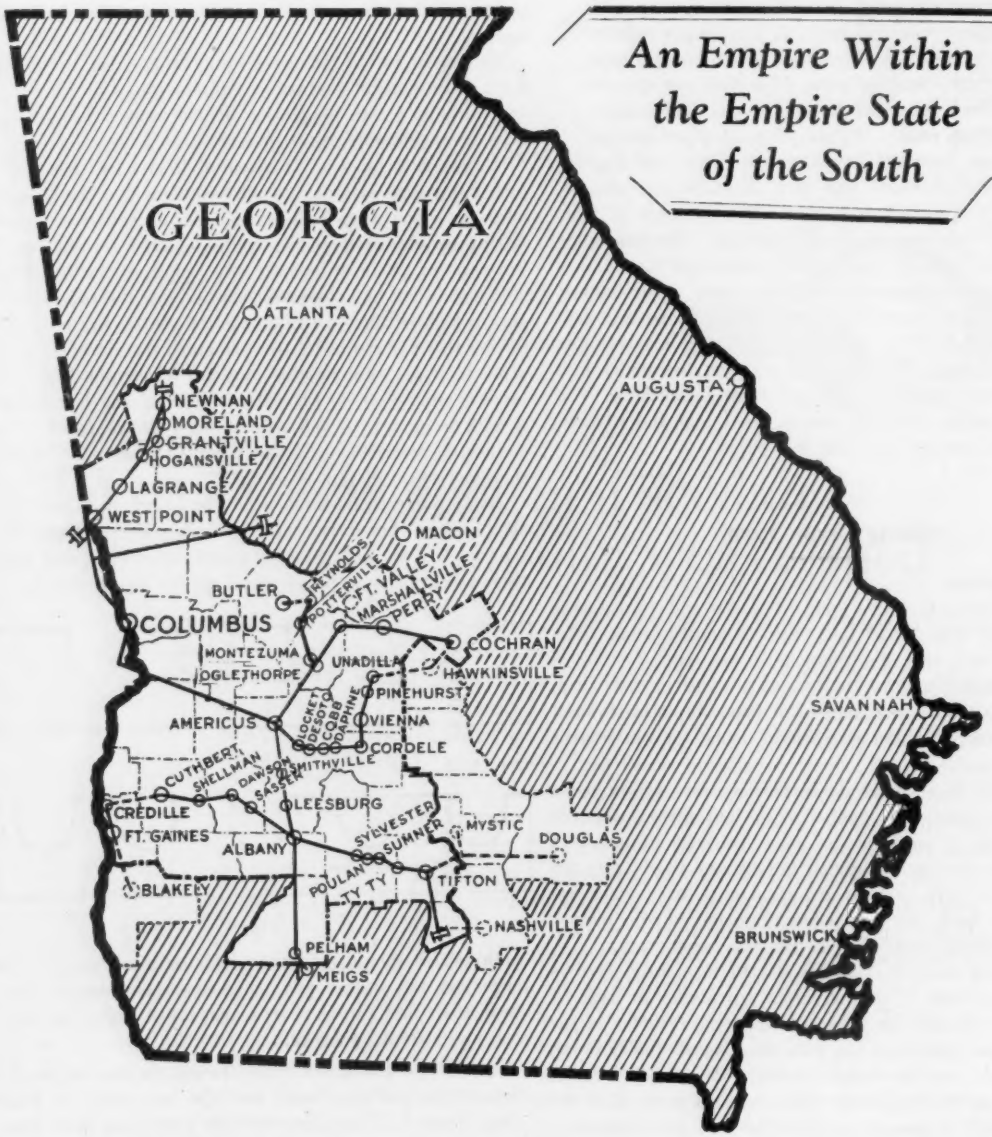


Fig. 1.

point which should be observed is, never to run it on slow speed on the slasher any more than is necessary, but to keep the speed up, as a slow speed will cause the ends to roll and eventually break.

Also, in running this yarn, we put the two beams of reverse twist yarn in front, and the two beams of regular twist behind. The yarn for the front size box, that is, the regular twist yarn, is run underneath the back size box, and then up between the boxes into the front box.

We use what we call a ribbon board or scallop board in connection with slashing crepe yarn. This is an ordinary board which has one side or edge scalloped four or five times, depending on the width of the warp. A rough sketch of the board is shown in Fig. 1. The yarn from the warper beams is brought through in ribbons in these semi-circular cut-out portions in the board, which increases the density of the warp and prevents it from rolling. One of these is used for each box. One is placed at right angles to the reverse twist warp just before it enters the back size box; and the other is located at the bottom, at right angles to the regular twist warp, just where it passes underneath the back size box on its way to the front box. These boards should be off-set, as shown in Fig. 1, so that the scalloped portions will be staggered. This presents an even warp



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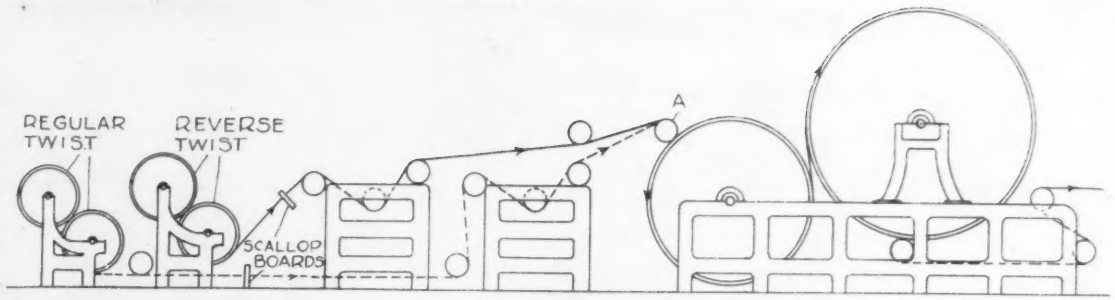


FIG. 2

straight across instead of having the two sheets go on through as ribbons after joining at *A*.

I am sending you herewith a rough sketch of a slasher hooked up with two size boxes for running crepe warp, in order to illustrate the several features I am explaining in this letter. This is shown in Fig. 2. As I have stated, the biggest trouble with crepe yarn in slashing is to keep it from rolling together. It will be noticed in the sketch that the regular twist yarn is shown by the dotted line until it joins with the reverse twist, when one solid line is used. Up to this point the reverse twist yarn is shown as a solid line to distinguish between the two yarns.

The sketch shows, as I have stated, that the regular twist yarn for the front size box passes under the back box, while the reverse twist yarn from the two top beams goes straight into the second or back size box. In running crepe warp on the slashers I have found it advisable, in order to prevent the warp from rolling, to use several extra rods or rollers under which the warp passes, in order to eliminate as far as possible the long expanses without guide rolls which would make it roll up into knots. You will note that we carry both yarns to the point *A*, and then run the warp under the small cylinder first instead of up over the large cylinder and then back around. This relieves the long stretch which would result from using the usual way of running the warp. In this method, the warp leaves the small cylinder, goes up over the large cylinder and back around almost to the bottom—in order to secure the additional drying surface on the large cylinder—and then it is taken back around another roller and up to the measuring roll.

I do not know if there is anything further I might add with regard to the method of sizing. So far as the formula is concerned, it is necessary to use a diluted solution of the regular size, because of the extra twist in the yarn, and I have found potato starch the best for this work.

If the man asking this question, or any other reader, wishes to ask any further points about our method of handling crepe warp, I shall be very glad to give any information I can. CONTRIBUTOR No. 300.

John E. Fothergill has been made assistant superintendent of the Pittsfield Mills, Pittsfield, N. H.

American Cellulose & Chemical Mfg. Co., Ltd., 15 East 26th St., New York City, have issued a booklet giving briefly and concisely some of the distinctive characteristics of Celanese brand yarn.

An Oil Spraying Experience

EDITOR COTTON:

In the June issue of COTTON I noticed where the Texas cotton mill men discussed the use of spraying oil on raw cotton.

We are spraying our raw cotton with oil and find it most satisfactory as regards keeping the fly down, and has improved the web on the cards. However, I was surprised that the subject of the emulsion was not discussed. Here are some thoughts brought out by experience:

(1) When the emulsion is mixed it must be stirred for 25 minutes.

(2) How does the man in charge know how long the emulsion is stirred, unless he stands over the man doing the stirring?

(3) Each morning the cover of the emulsion tank must be raised and the emulsion stirred. Without this, poor results are secured. What the system needs is a paddle attached to the rod at a point say about two inches over its reception. I am having one attached to the rod in our tank.

(4) Each morning, you find the oil at the top of the tank, and if the system is set in operation before stirring, a sort of paste will block the small pipes leading to the sprayer.

(5) The fan revolves 3600 revolutions per minute.

The lubrication method can be improved and should be.

WASH (R. I.)

Controlling Yarn Sizes

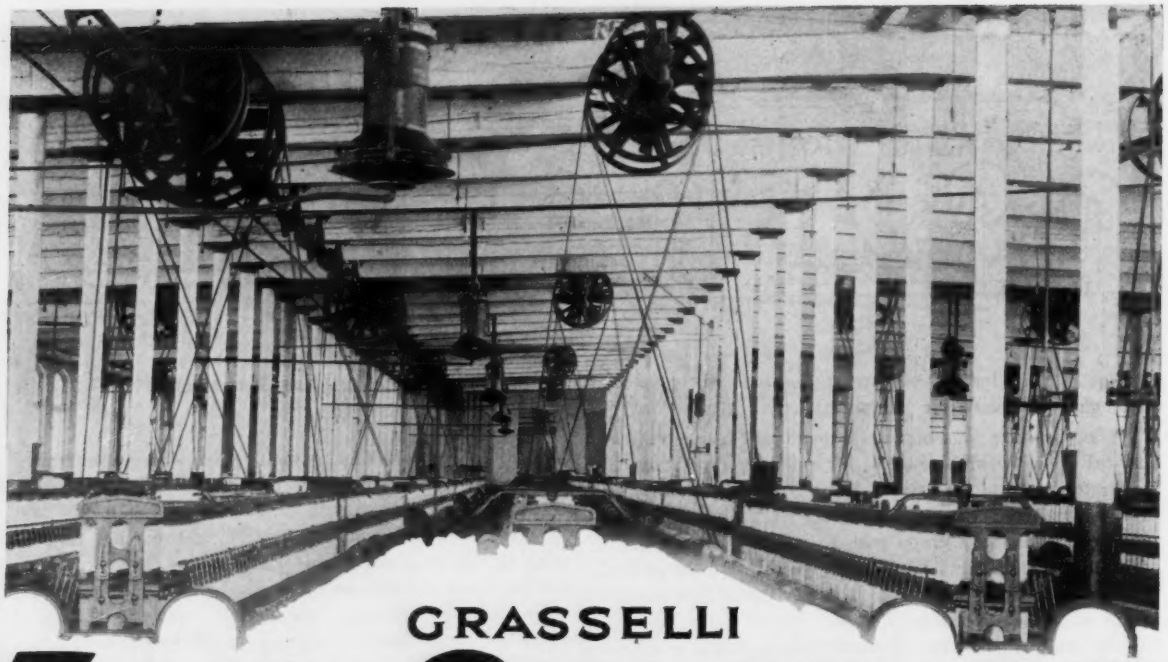
EDITOR COTTON:

The problem of controlling yarn sizes is one which deeply concerns every overseer and superintendent. Changes in weather, cotton and employees, as well as numbers of other conditions, materially affect the ultimate size of the yarn being spun.

The writer has worked out the following method of watching yarn sizes and has found it very helpful: The Daily Report Sheet No. N 354-30 G, published by Keuffel & Esser Company, New York, is used for this work, and one sheet covers the size reports from drawing to warps for the period of one year.

Figure 1 shows the arrangement of the size chart. The weights and counts must, of course, be adapted to the mill using the chart.

A red line is drawn across the sheet indicating the standard size, or the size wanted, for each process, and enough space left on either side to provide for the varia-



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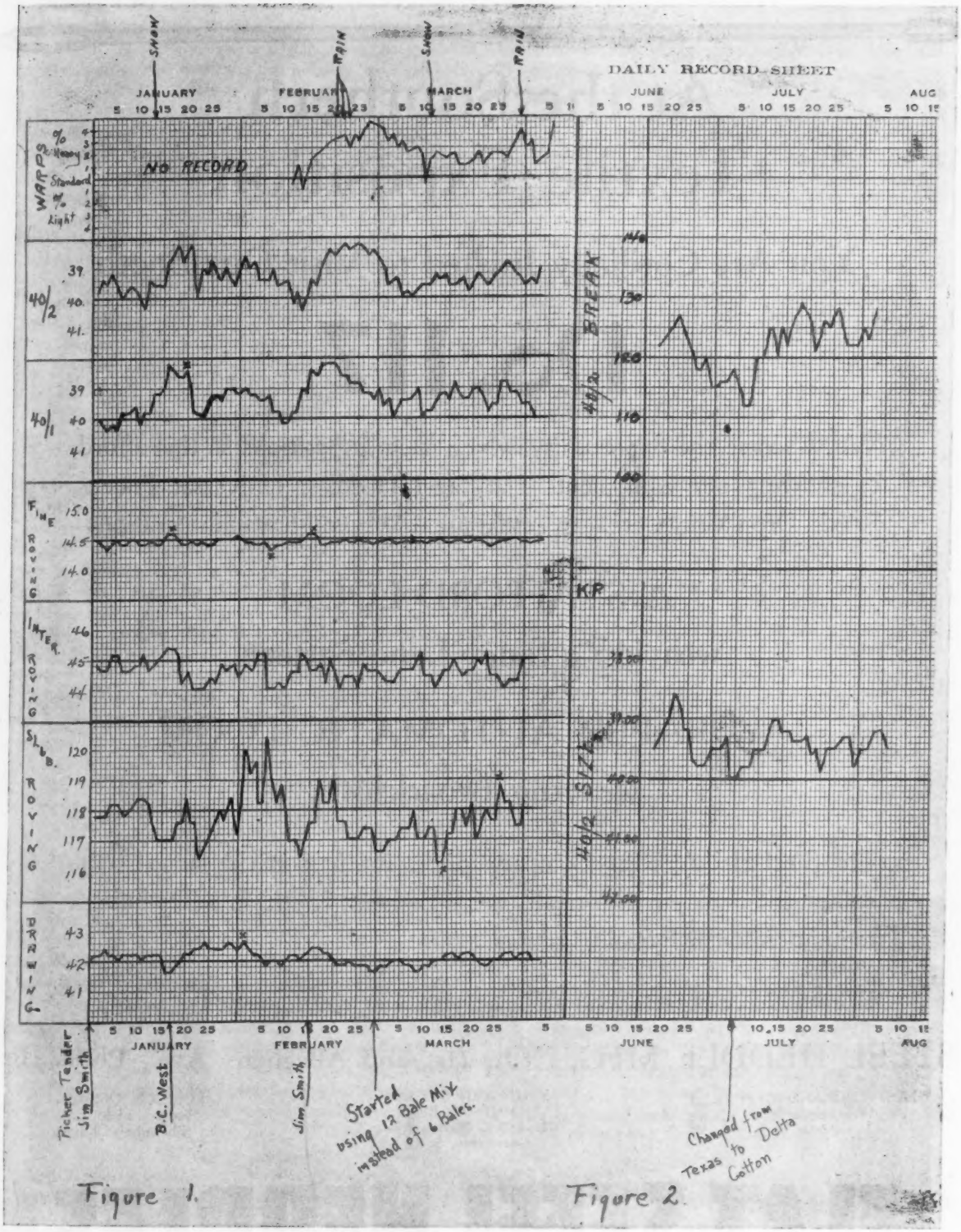

Figure 1. Figure 2.

Keeping a Daily Check on Yarn Sizes.

tion expected. (This line photographs black in the illustration, but is the center line in each instance.) An inspection of past size reports will indicate the proper range. The average daily size is then entered at the intersection of the proper size and day lines and the size line connects the dots showing the trend of the sizes. The writer notes at the top of the sheet the weather changes, and at the bottom of the sheet such changes as picker tenders, systems,

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cotton, etc. The effects of these changes are easily followed with this chart. A cross indicates a change in the draft gear. A cross above the size line indicates a change lighter, and a cross below the line indicates a change heavier.

After starting a chart of this kind and studying it for a month or so the trend of the yarn size can be much more definitely forecast than by studying over a pile if size reports. Necessary draft changes can then be made and the numbers kept very close to standard.

The writer has found that a set of crown gears for the slubbers providing for a change of one tooth or approximately ¼ tooth in the draft gear, makes an excellent place to control the size. If the drawing size changes two or three tenths one change should be made on the slubber and the size remains remarkably steady.

Figure 2 shows how the chart can be applied to breaking strength.

S. S. (N. C.)

Increasing the Size of Bobbins.

Editor Cotton:

Regarding the problem of "Christy," in the September number of Cotton, of increasing his filling bobbins from 6½ to 8 inches in length, I would state that the spindle he now is running, where the top of the bobbin is 1⅜ inches higher than the spindle point where the bobbin grips the spindle, will give him a great deal of trouble, and will shake if he tries to run an 8-inch bobbin on it. What he should have is a Draper D-5 spindle, measuring three inches below the whirl, and 7 3/16 inches from where the base of the bobbin rests. This will bring the spindle point right on a level where the bobbin grips the spindle especially using a Draper bobbin.

I am of the opinion it would be much cheaper for him to buy new spindles with these measurements.

M. (Mass.)

Editor Cotton:

This is in reply to "Christy's" query in regard to whether he can successfully increase his bobbins from 6½ to 8 inches without changing spindles. He did not state whether it was his good fortune to be in position to change spindles if he so desired and saw fit. However, I will assume that is his privilege if he sees that it should be done.

To run a bobbin which extends 2⅞ inches above the top of the spindle is, to say the least, not an ideal condition, and a slower spindle speed will have to be used than would be the case if the spindle was made for an 8-inch bobbin. However, this can be done with fairly good results if the right construction of bobbin is used, and the spindle is in good shape.

The bobbin should be butt-heavy, which is usually the case with filling quills, and, above everything else, it will have to be a good fit. Under the conditions, if the quill does not fit perfectly at the top and bottom, it will give a great deal of trouble by riding up.

If the spindles are worn badly and in need of replacing it would indeed be a paying proposition to replace them at this time. But if they are in fairly good shape, there would seem to be no need of discarding them in order to change the quills.

"Christy" says he has 3 inches below the whirl, which indicates that he has, or has had, a very good spindle. An 8-inch bobbin can be run on this spindle with practically as good results if not better than can be secured on a spindle with only 1⅞ inches below the whirl, even though it is 8 inches above the whirl. There are quite a few mills running the 8-inch bobbin on such spindles.

In conclusion, let me say that if "Christy's" spindles are in good shape, and he will use extreme care in seeing that his bobbins are a good fit, he will have very little trouble in running an 8-inch quill on his 6-inch spindle.

I would advise him to inspect every bobbin received by placing it on a spindle, which has been placed in a vise between two boards, and seeing that it fits snugly at the top and bottom and comes down on the whirl to the right distance. Then place it on a true-running spindle to see if it is perfectly balanced.

I know one mill where they inspect all bobbins received in that way, and in a recent shipment they had to reject practically one-third of the order.

Contributor No. 302.

Why the Roving Runs Lighter.

Editor Cotton:

In the June number, "T. R. F. (Ga.)" asked "What Makes the Roving Lighter?" He did not say, but I judge that the drafts and twists on the speeders remained the same on the short staple as on the long staple. When changing onto shorter cotton, and the roll settings, drafts and twists remain the same, he is right in regard to the roving being lumpy and thin places more numerous. The cause of the lighter roving is, in my opinion, that there is an excessive breaking of fibers, and that increases the fly waste, which means a greater loss. Consequently, the roving becomes lighter because the necessary bulk of the stock is not being retained. The more fibers thrown out in the different processes, the more stock it takes to make the standard being run. If he would follow this stock on through the spinning room, he would find, with the same hank roving run on the longer staple cotton, that the yarns have lightened up also, or he is spinning a finer number from the same hank roving. Because he is not holding the quantity of stock necessary. The more broken fibers, the greater amount of fly. Thus lighter roving and lighter yarn. My opinion is based on actual experience. I have watched closely to find the cause and the remedy. The remedy is closer rolls.

I agree with "T. R. F." that the twist runs to the thin places, but he can take a yarn of 1.50-hank roving with two turns of twist in it, and then put in seven turns of twist, and it will still be 1.50-hank roving.

Let's give more time to these discussions, and learn.

R. R. (N. C.)

Editor Cotton:

This is in reply to the question of "T. R. F. (Ga.)", in the June number of Cotton, as to what makes the roving lighter when changing to shorter cotton. He states his rolls are set 1⅛-inch and when changing from ⅞-inch to 15/16-inch cotton, it makes his roving lighter.

My opinion is there are two reasons for this. First, his rolls have too wide a setting, due to the fact that the rolls do not grip many of the short fibers and cause the

roving to shed off in greater amount than with a closer setting; second, he cannot run his frames with as much tension as with longer cotton. This also will cause the roving to shed and result in light roving. This is only my opinion.

J. M. (S. C.)

Thin Places on Shade Cloth.

Editor Cotton:

This is in reply to "Contributor No. 4231" regarding thin places on shade cloths made on E Model Draper looms without feelers.

I will give you a few suggestions which may help this man and others having this trouble in regard to checking up on looms running shade cloth:

After having the looms put in good shape make each fixer go over his looms and check up on the following points:

Be sure that the filling forks are properly adjusted; tighten the swords; tighten the rocker shaft boxes and see that the collars are so set that there is no lost motion; keep the filling racks *clean;* the pitman arms should be tight; the parallels should be in good shape; the eccentrics should be fitted properly. Have the loom brakes fixed so that they *work;* have the shuttles inspected to see that they are holding the bobbins straight and be sure that the battery hands fill the batteries properly.

It is absolutely necessary that the take-up is working properly and letting back when it is required to do so. The let-off must be clean and in exceptionally good working order.

If "Contributor No. 4231" will keep these points checked up on his looms he should have little trouble from thin places.

Contributor No. 296.

Editor Cotton:

You can use the following as my reply to "Contributor No. 4231," who asked in a recent issue how to keep down thin places on 44 x 40 shade cloth, without running feelers:

It can't be done. When you eliminate thick places, then you have thin places. Feelers properly installed and kept in constant first-class condition will reduce the thin places to a minimum. Either put on feelers or keep off of shade cloths if you want to go to heaven when you die.

Contributor No. 4232.

Editor Cotton:

In regard to eliminating thin places on 44 x 40 shade cloth on Draper looms without feelers, about which "Contributor No. 4231" asked in a recent issue, the following are my suggestions:

Examine the take-up roll bearings on the loom, and replace with new ones any that are found worn. See that the take-up train of gears are perfectly clean and well lubricated. Have the gears adjusted so that they fit very snugly, but do not let them bind. Have the loom to let back two picks when the filling change is made.

Slightly worn parts are objectionable as they contribute largely to the cause for thin places. Nothing but perfectly pieced-up and wound filling can be used with success.

Should this fail to meet his customer's demands, I know of no other remedy except feelers.

Contributor No. 4233.

Editor Cotton:

I note the question published in Cotton from "Contributor No. 4231" who is having trouble with thin places in shade cloths.

Unless this mill's trouble is caused by taily bobbins, I do not believe they can eliminate the thin places by tying down the let-back motion, as the letter indicates they are doing.

I believe they will have to put the let-back motion into operation, and work on each loom individually to eliminate the thick places, which may be caused by various reasons in the mechanism of the take-up gears, sand roller, etc.

Contributor No. 4234.

Twist in Roving.

Editor Cotton:

In reference to the inquiry of "D. A. D. (N. C.)" on the value of twist in roving as published in the April issue of Cotton, I am of the opinion that the old idea, as he takes it, is right, just enough twist so as to allow the strand of roving to pull in the creel without *stretching* or *breaking back.* Oftentimes a roving may not "break back" in the creel, yet twist is so soft as to permit stretching, which will be detrimental to the making of an even yarn and may even result in helping to produce "bad spinning." Oftentimes, another tooth of twist in roving, even though the roving is not breaking back, will be found to aid in spinning simply because the stretching of roving has resulted in weak spots in the yarn and ends will not stay up.

On the other hand too much twist in roving means lost production at the finisher speeders and will necessitate a more open setting, usually, in the spinning room than would be the case if twist were not higher than necessary, and this feature of a more open setting usually tends toward a weaker yarn. All mill men, as a rule, try to keep the rolls closed as closely as possible. On the other hand, if twist is too high it may also mean grooved rollers in spinning and occasionally a "stringy end" if not set wide enough to allow proper drawing out of the fibers. Especially will this be noticeable where a short draft is being used, as the front roller pulls the fibers from the middle roller with a lower relation of speeds, so that wider setting is also necessary with a lower draft or shorter draft.

I think "D. A. D." will find that it is a general practice in mills equipped with self weighted back and middle top rolls in spinning to run a softer twisted roving than in mills equipped with weighted top rolls. As a rule, the first named type of weighting is used only where longer staples are being run, which will permit of a lower twisted roving, the latter type of weighting being used on shorter cottons which require more twist to run the roving. Also the rollers being weighted in spinning can take a roving with a higher twist.

There are probably numerous mills running today that do not give this matter of twist in roving enough consideration. Many carders govern their twist by so-called standards of machine builders, which standards should serve as a guide only, and not as a fixed or fast rule.

Some mills insert a tooth more twist in their roving during the summer months, especially July and August to aid in running in the card room. Another plant may find that its local conditions do not require this and can run

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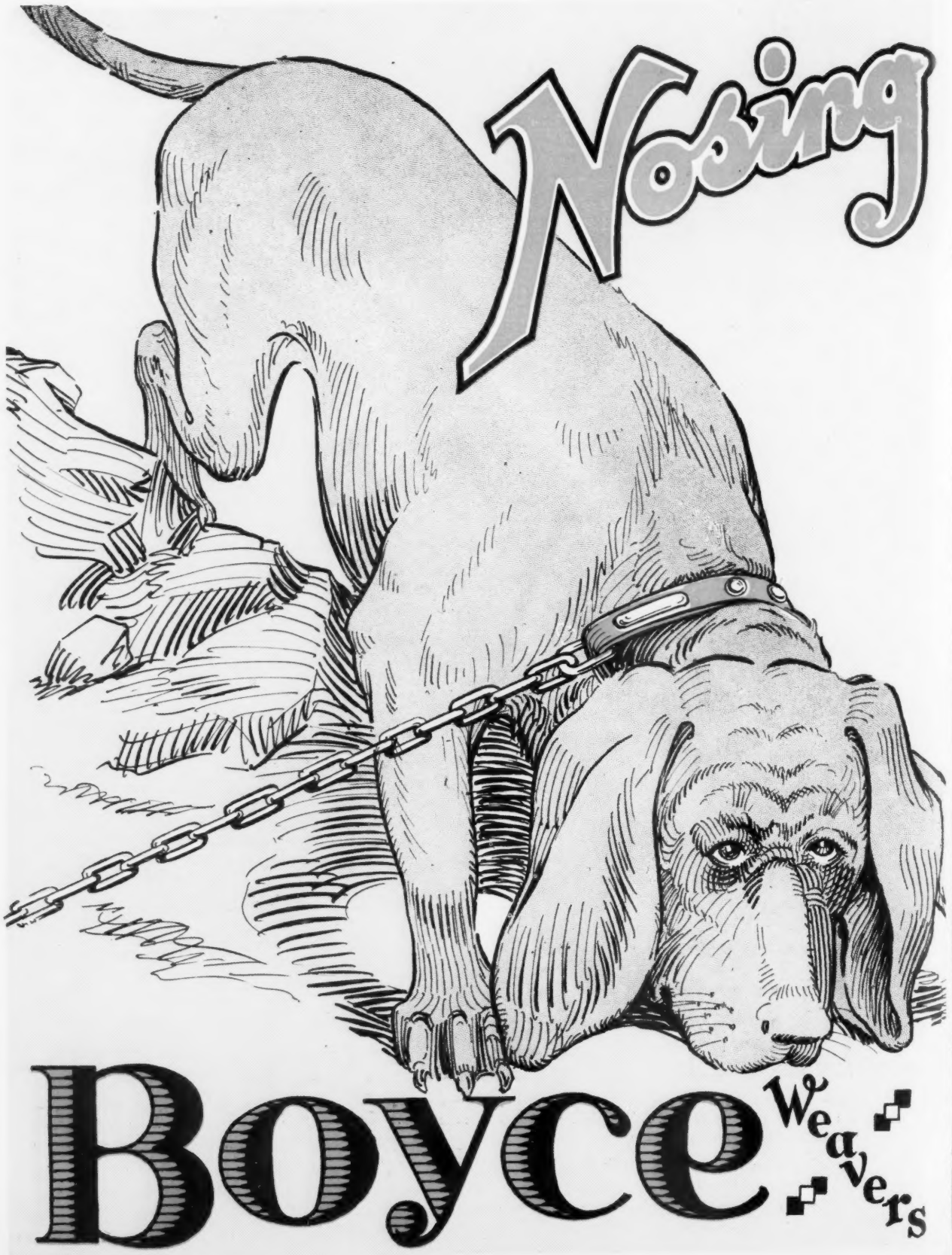
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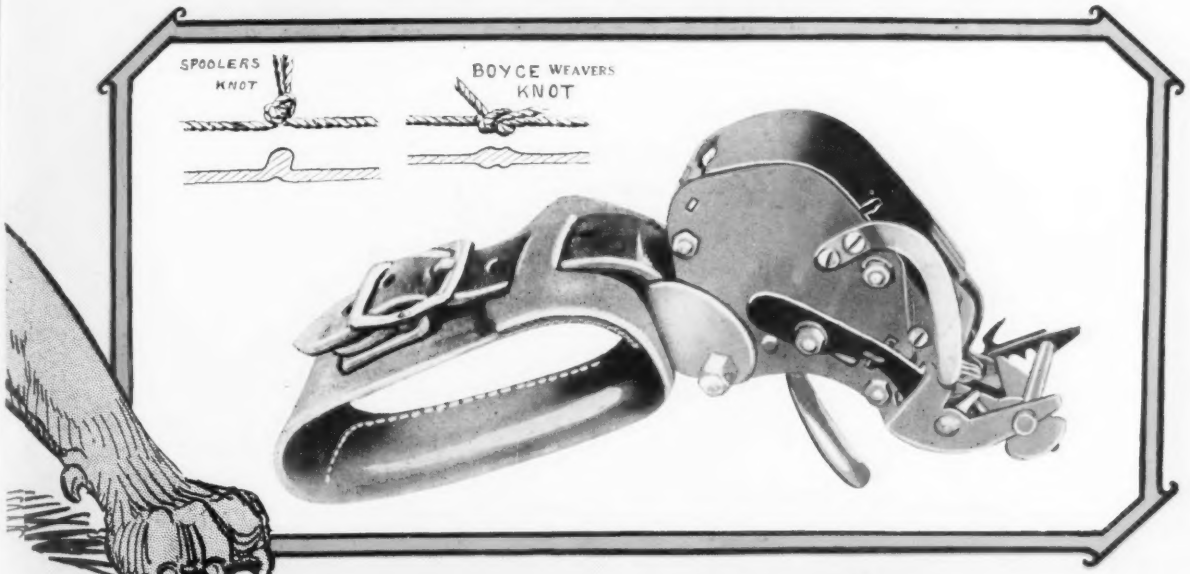

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with a certain twist on a certain roving from a certain stock day in and day out, provided the stock is kept to that grade and staple.

In summarizing briefly, I should say that twist in a certain roving of the same class of stock may vary in two plants, due to preparation, atmospheric conditions and local conditions varying in these two plants. Twist should be governed by experience, and if stock comes through better, twist should be taken out of the roving, and reinstated if the stock begins to slump off the other way.

A spinner will notice roving breaking back on small bobbins in the creel when the twist is too low, or if too high the strand will run through the rolls. Skewers should be watched to see that they do not become blunt and thus cause stretched roving with a breaking back in the creel and then have the cause placed at not enough twist in the roving. Another feature to consider is that roving should not be so soft twisted as to allow any stretching during the winding on the roving bobbins at the speeders. The usual test for twist in roving is to try with the fingers and also to place a bobbin on a table, etc., and see if it can be turned by pulling the roving.

I trust that this will be of some interest to "D. A. D." and I should like to see replies from some of the other readers of COTTON. BERT (R. I.)

Overcoming a Carding Difficulty.

EDITOR COTTON:

In the February number of COTTON we were given a few remarks from "Wash (R. I.)" in answer to the carding difficulty of "C. B. T. (S. C.)" and in these remarks I think he has fallen very short of solving the carding difficulty that is of the stock rolling and dropping between the arch and the cylinder. He claims there are many causes for this evil, and one of these, though he only states three, is "too great a distance between the toe of each flat, which cannot be remedied."

What is the cause of this extra distance between the "toe" of each flat?

We mill men, as well as others, perhaps know that these flats when they are working on their identical machine, though their speed is slow, are generally subject to some friction, and there is always a certain pull being exerted on every link of each chain which connect the flats on either side. Now here is the point. The flat chains are subject to wear in the screw-hole of each ink, more in some than in others; hence, the increased distance between the flats. This state of worn chains causes endless trouble, especially when flats have to be ground on the card and each one is supposed to be raised at a certain point, set by the grinding motion.

Of course the remedy is new chains. If "Wash" had seen flat chains that had become elongated three inches in a total length for 110 flats he would soon know the cause as well as the remedy for the excessive distance sometimes seen between the flats. So I think this distance from each "toe" of the flats cannot be acclaimed as a cause of the carding difficulty with which "C. B. T. (S. C.)" has been troubled, as the trouble of stock rolling as stated, must occur before it meets the flats.

However, I think that if "C. B. T." will examine his licker-in and cylinder wire for damaged portions at the ends, and clean the under screens of both cylinder and licker-in, especially at the ends, also the back-plate for rough places which sometimes are seen at the ends through having been set too close to the cylinder, causing the wire to mark the plate on the inside of course. Having ascertained these parts to be in order and having secured a perfect setting, it is most likely that "C. B. T.'s" trouble will be overcome.

I mention the point of seeing that the screens are properly cleaned at the sides or ends because I overcame this same difficulty myself by overhauling the under-screens, as it occurred to me that while the sides of these were clogged with dirt, this prevented further dirt from dropping through, thus causing a little extra load on that section of the wire, which the flats undoubtedly would not hold. Hence the escape of the waste between the arches and the cylinder.

Most cards at the present time are equipped with two strips of hardwood fitted between the arch and cylinder at a point near the back plate adjustments and hence prevent to a great extent the trouble of stock flying out and dropping, as stated by "C. B. T." who I hope will benefit by my few remarks. REX (R. I.)

Figuring Cloth Specifications.

EDITOR COTTON:

I note in April COTTON that "E. T. (S. C.)" wants a rule for figuring reed, number of warp, etc., to make a piece of army duck cloth, to be 30 inches wide; weight, 12.4 ounces per yard; 47½ sley and 30 pick filling per inch.

I would first find the yards per pound:

$$\frac{\text{16 ounces per pound}}{\text{12.4 ounces per yard}} = 1.25 \text{ yards per pound.}$$

Then I would get the number of ends in the warp, and the width at reed:

47.5 sley × 30 inches width of cloth = 1,425.0 = ends in warp.

1,425.0 ÷ 2 = 713 dents for body + 10 = 723 total dents used.

47.5 sley − 1 = 46.5 × .95 = 44.175 ÷ 2 = 22.08 dents per inch.

723 ÷ 22.08 = 32.7 or 32¾ inches width at reed.

Next find the weight of yarns required by dividing 100 yards by the yards per pound:

100 ÷ 1.25 = 80 pounds of yarn required for 100 yards of cloth.

80 ÷ 2 = 40 = weight of warp; also weight of filling.

$$\frac{\text{1,425 ends warp} \times 116 \text{ (100 yards + take-up)}}{840 \times 40 \text{ pounds}} = \text{5s warp.}$$

$$\frac{\text{30 pick} \times 32.75 \text{ width in reed} \times 100 \text{ yards}}{840 \times 40 \text{ pounds}} = \text{About 3s}$$

filling, or 4s warp and 4s filling.

This method is probably crude, and I will be interested to see what other readers have to offer. C. W. (CONN.)

EDITOR COTTON:

In reply to the questions of "E. T. (S. C.)" in the April issue of COTTON concerning a rule for figuring the reed, number of warp and filling, and contraction in army duck cloth.

Well, I'm no designer or overseer, but I'll try to help

TO BE skid-proof and protect heavily burdened draft-horses—to be moisture-proof and not absorb oil, grease or water—to be wear-proof and avoid continuous repairs and frequent replacement—a driveway in industrial service should be of vitrified brick, asphalt-filled.

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him. The following is the rule to find the average number of yarn required to produce cloth of any desired weight, width and pick: Add together the number of picks per inch of warp and filling; multiply their sum by the yards of cloth per pound, and multiply this product by the width in inches. divide by 840 and the quotient will be the average number of yarn required.

To find the percentage to allow for contraction in weaving: Multiply the picks per inch by 3 and divide by the counts of filling. The result will be the percentage to allow for contraction. H. D. (MASS.)

Slack Selvages on Warpers.

EDITOR COTTON:

A few months ago I wrote to the "How Other Men Manage" department of COTTON asking for some discussion on how to prevent slack selvages on warpers, and am more than satisfied with the response to my request.

My reason for asking for such a discussion was that a few days before writing I was talking to the overseer of weaving at my mill and he expressed the opinion to me that the majority of the trouble he had with his selvage in the loom was the result of the yarn going on to the weaver's beam in a slack state, and he thought it could be remedied in the warper.

This made me think more on the subject than at any time previously. I realized that I occasionally had a slack selvage but had always been more concerned about the slashing, never having given a serious thought to the weaving and the trouble that might occur in the loom.

In the April issue of COTTON the remarks of "L. A. B. (N. C.)" were very interesting. I can realize that it must have been a very happy thought which made him measure up the length of arms supporting the beam, and I can readily see that the beam being out of line with the supporting shaft would get more compression at one side than the other. I wish to thank "L. A. B." for drawing my attention to it.

What I have in mind chiefly is the fact that you may make nine beams on one warper and all come off perfect, but the tenth beam off the same machine will come off slack. It appears to me that in the case of "L. A. B." every beam off the two warpers mentioned would be more or less slack until he had the supporting arms changed.

"H. E. F. (Conn.)" certainly has the right dope regarding the common causes of high selvages, but I should think that these are known to most every overseer of any experience. The writer's object is to find out something new; for instance, the experience of "L. A. B. (N. C.)," I appreciate very much the idea of changing from old iron beam heads to steel ones. This would be sure to effect some improvement, but every overseer is not in a position to suggest such a change. I should think it is not a very small item to change a large number of beams to steel heads; I mean from a financial standpoint. I would think it better to equip the warpers with the conical roller mentioned by "F. F. (Mass.)," that is, unless it is a very expensive arrangement, whereas you may only have twenty warpers, there would probably be a hundred beams.

"Mack (Ga.)" suggests some very good ideas, especially when he mentions examining the beam barrels. I presume he refers to the part of the beam that has been dented

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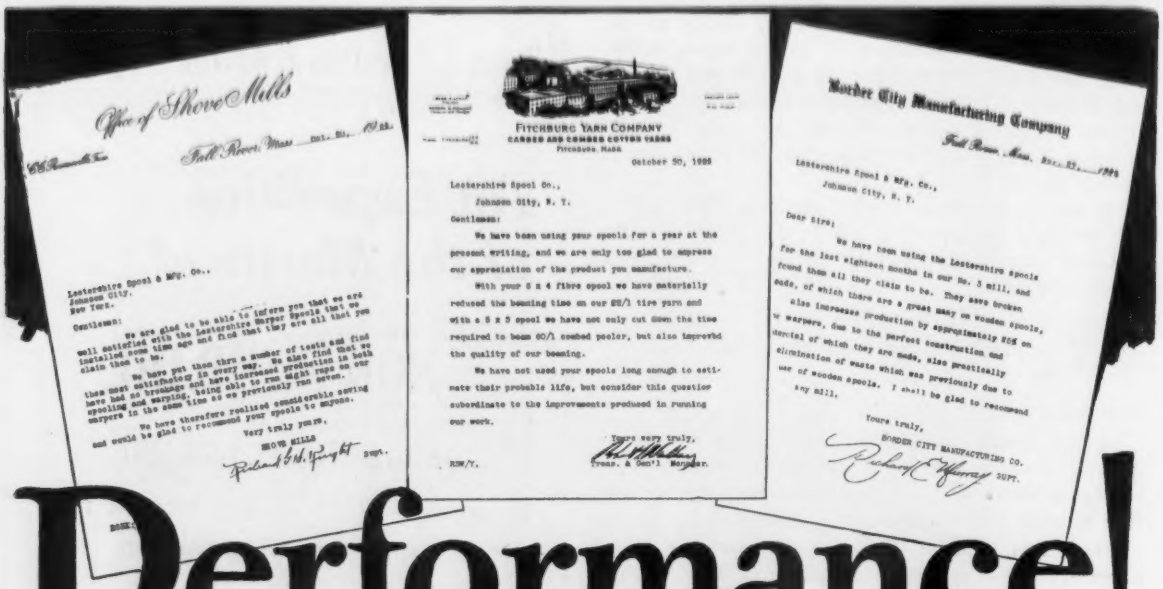

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generally about two inches from the beam head by other beam heads striking them. This is sure to cause some uneven tension in the running off either in the slasher or twister. The idea, also, of using a few iron pegs for the selvage ends is very good. This is certain to put a little more tension on the yarn at the side.

Referring to the letter of "F. F. (Mass.)," this is a very good letter in substance and he evidently has the same dope as my boss weaver with regard to the relation of slack selvages to the trouble in weaving. He refers, however, to causes which have been obvious to me for years. I thank him, however, for the advice contained in the latter part of his letter, and just as soon as possible I intend to visit a large mill in my vicinity where I have heard they have the device mentioned in operation. J. R. (Mass.)

Aldrich Machine Works Represents Henry L. Scott Company in the South

Effective October 1st, the Aldrich Machine Works of Greenwood, S. C., took over the southern selling agency for the Henry L. Scott Company of Providence, R. I., manufacturers of the well known Scott testing machinery for yarns and cloth.

Scott testers are considered a standard proposition with most cotton mills, and in this new appointment of the Aldrich Machine Works as southern selling agents the Henry L. Scott Company will be able to keep in closer touch with the needs of their customers in the South and render them greater service than has even been possible before.

In order to increase the promptness of service a stock of repair parts for standard testers will be kept on hand at Greenwood, S. C., as well as the principally used models of Scott testers, so that in case of a specially urgent order for a hurry shipment of a machine it can be made from Greenwood rather than wait for its delivery from the Providence factory.

As arrangements are being made to handle both new business and repairs through the Greenwood office, a man entirely familiar with the Scott equipment will be available in Greenwood to take care of this special line for the Aldrich Machine Works. In this way emergency service can be obtained more quickly and at less expense than would be the case if it was necessary to go to the home office at Providence.

Card Stripping and Strippers.

Editor Cotton:

I notice in the February issue that my article on vacuum stripping started something. I did not answer "T. A. B. (Mass.)" for the simple reason that I thought, and knew, that every reader of this department who had had any experience with vacuum stripping realized from his article that there was a defect in his air system. Many mills have trouble with condensers also. I have seen cases where the carder claimed that a No. 4 condenser was required in place of a No. 7. One case which I have in mind is where a new belt driving the fan was the trouble.

Remember the Crighton opener? That received the same black eye as the vacuum system of stripping. Remember the metallic rolls? Many of these were thrown in the junk heap as no good, but today the Crighton opener is admitted to be the best cleaning agent, and the me-

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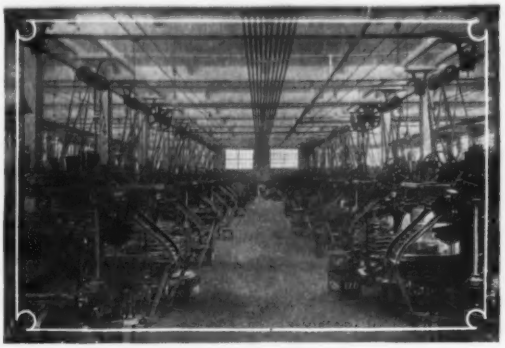

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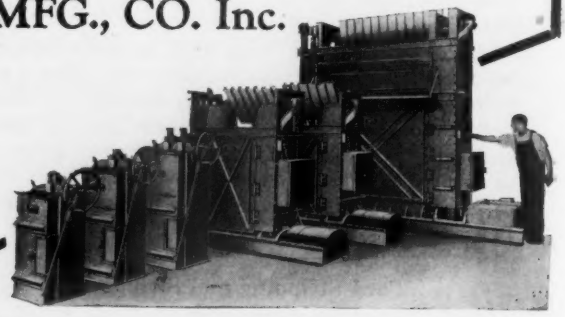

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tallic rolls as the best drawing agent. Now read the short article written by "J. R. R. (S. C.)" and it will be seen at a glance that he is a practical man.

Here is the difference between the roller brush and the vacuum system of stripping. It must be admitted that to the naked eye the roller brush removes all foreign matter from the cylinder. Every man who reads these lines may have the opportunity of making the following test. When at stripping notice after stripping with the roller brush how clean the cylinder and doffer appear. Now in such a case the stripping brush should be made as clean as possible and then, stripping the cards again, it will be surprising the amount of matter which will be collected on the brush at the second stripping.

It is safe to say that if the same thing happened with the vacuum system of stripping, the system would by this time be ostracized.

Remember the cry about the Crighton opener chewing the cotton, but those who gave the matter due consideration understood that the stock was struck while in space, and no injury resulted. The case is similar to that of roller stripping and vacuum stripping. With the roller stripper an untold amount of dirt is being carried against the keen points of wire on the cylinder, while with the vacuum system there is a suction of air that draws the dirt away and prevents the wire being robbed of its fine point. That alone is enough for me, to say nothing of the sanitary side of the question, which space does not permit my discussing at this time.

Just a word to "Rex (R. I.)" I want Rex to know that I was on the right side of the fence when I championed the Crighton opener, metallic rolls and also the flyer-lead frame and know the best stripping system.

In closing, I wish to say that the builders guarantee the vacuum system of stripping. I am not thinking, but I know from experience that it is far ahead of roller stripping and here to stay. I know this too, that before the vacuum system of stripping was installed, we were always short of strippers, and now we turn them away.

WASH (R. I.)

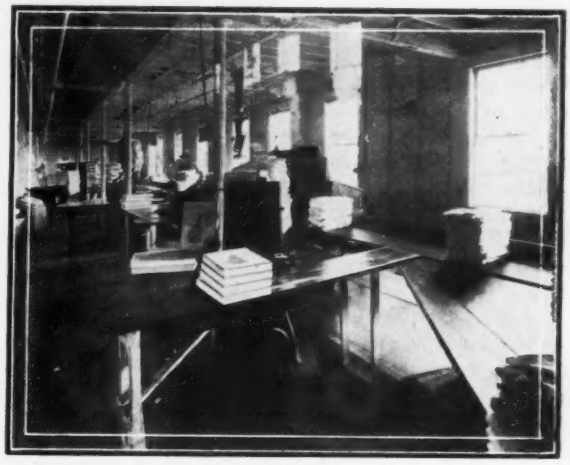
Roving Tension.

EDITOR COTTON:

The May issue of COTTON contained a letter from "Wash (R. I.)" in which he states that "K. F. F. (Mass.)" was wrong when he stated in his article on "Roving Frame Tension" in the September issue that the cone belt should be started at the extreme end of the bottom cone at the beginning of the set of bobbins. Also "Wash" declares that the very logical statement of "K. F. F." is misleading to young students for this rule does not suit all cases.

I am interested in these statements, and I must agree with "K. F. F." regarding the starting of the cone belt in all cases, because, regardless of all those ideas of starting the belt "a little way up the drum" for the first layer because the ends are too tight, the extreme end is the proper place at the beginning of the set, and by this I mean the first layer of roving on the bobbin. This is because, as "Wash" states, "the cones are really so many separate pulleys connected in a continuous string."

So, is it not quite feasible that the first pair on each respective "string" should be used for the winding on of the first layer, as cone drums are designed by the machine



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builders to cope with a certain range of counts or numbers, and if the correct gears and proper spacings of the coils are employed there will not be any need to depart from the rule as given by "K. F. F."

Being fully aware that there is no reliable rule by which we can obtain the proper rack gear, owing to variation in twist, grade of stock, and the wrapping of the roving around the pressers and flyer-top, I think the following example will explain the most satisfactory rule for finding the rack gear for new frames. The size of this gear depends upon the number of layers required to fill the bobbin.

Assume that 38 layers of roving per inch are found suitable, and the full bobbin is 3⅝-inch diameter minus 1⅛-inch for the empty bobbin, which leaves 2½ inches of cotton. Now, $38 \times 2.5 = 95$ layers total. Using the English builder, this means 94 changes of the lifter as also 94 half-tooth escapes of the rack gear, also 94 short movements of the cone belt and 94 short movements of the long and short racks.

Now the short rack or poker bar, we will say, is ¼-inch pitch, and this gears with a 20 gear on the same stud as the rack gear, and this moves 10 inches in making a full bobbin. Of course, the surface movement of the 20 gear will also be 10 inches. Thus $10 \times 4 \div 20 = 2$ revolutions of the rack gear shaft. Hence, 94 half-tooth escapes of the rack gear divided by 2 equals the number of teeth moved, which in this case must be 47 teeth, so in making 2 revolutions, we get $47 \div 2 = 23.5$ teeth in the rack gear. In which case, a 23 or 24 gear would have to be used.

However, my mention of the method of finding the proper rack or tension gear is just to remind us of the fact that all new frames are not always started with the nearest gear regulating tension of the roving, and this certainly brings about that method of having to set the cone drum belt up a little and afterwards keeping the tender "on the hop" letting the rack out or the reverse.

Anyhow, I am aware that many mill men do not allow any tenders to perform this method of getting by, as they are aware of the result, even if they do run the frame slow on the change. I can understand "K. F. F." being very keen on this matter, and I am sure the overseer of spinning appreciates it.

I am very grateful to "Wash" for giving me one little point to consider in his letter in the May issue—and that is his statement about the strand on all fly frames, which he says is of less diameter when being wound on the empty bobbin than it is at the finish of the set. This is caused by the pressure of the presser pad which he says is at its greatest when the bobbin is small. But why? It is very simple to make an assertion and say the other fellow is wrong, but proof of these assertions is quite a different matter. I fail to see the point why the roving is decreased in diameter through the pressure of the flyer presser.

At first thought it seems to me that according to "Wash's" statement, the strand on being wound on the empty bobbin possesses the required turns per inch of twist, but after having wound on forty or more layers, that roving must have lost a certain amount of twist. Hence a gradual variation of twist throughout the set. This is what it amounts to, and by the way, I for one have become interested in this matter.

Then, again, I have tried to think that perhaps during the winding on and building of the bobbin, the lifter or carriage reduced in speed a little more than was required for the rate of winding-on, but alas, this cannot be as on all frames the speed of the lifter is eased proportionately with the rate of winding-on, in fact, I think all mill men know that the gradual movement of the cone belt down the length of the top cone and up the bottom cone eases equally the rate of winding-on and the rate of the lifter movement as required by the increase in the diameter of the bobbin.

However, I fail to see this increased pressure of the flyer presser "Wash" tells us about, and also as he also states if "G. D. S." had a rack gear to give the proper tension at the beginning of the set the tension would be tighter at the finish because, as he, himself, states, are not the cones a series of pairs of pulleys connected, and each layer of roving added to the bobbin must be considered separately, and the diameter of the cones figured for that layer alone.

Just as I have already stated, figure as near as possible the correct rack or tension gear for the number of layers per inch required, and the tension will not bother much, provided the other gears are correct for the numbers being made. However, returning to the condensing action of the flyer presser as mentioned by "Wash," and the gradual increasing diameter of the strand, I must say, and I believe I am correct, that I have always regarded the action of the flyer as an unwinding one, and it prevents the winding-on of one coil for every revolution it makes in putting twist in. Get that, *putting twist in.*

It is also necessary to run bobbins and spindles at such a speed in order to accomplish twisting, and to depend upon the difference in speed for the winding-on.

Anyhow, maybe "K. F. F." will not mind my butting in on this little question of roving tension, but one or two points set me to thinking, and now you have my opinion.

D. E. (R. I.)

Keeping Laps Even.

EDITOR COTTON:

Referring to the article by "Wash (R. I.)" on keeping the evener motion sensitive, appearing in the March number of COTTON, will say he is right, and this reminds me of a fellow I once worked for when I was second hand. He said that the evener motion of a picker should not be too sensitive and move too easily. However, I want to say that no one should ever be afraid of getting the evener to working too easily.

An evener is a pair of scales in a way, so to speak, and its pivots and working parts should be just as flexible as the pivots and working parts of the lap scales on which the laps are weighed if it is possible to get them to work that freely. The more freely they work the more even the lap yardage is going to be, and the easier the feed rolls and apron can be handled the less belt slip there will be, especially where the evener cone pulleys are of a small diameter, such as the Kitson picker for instance. To get a good even lap, first start this evening at the breaker lapper, for good judgment will teach us that it makes no difference how sensitive the finisher evener may be it is almost impossible to get an even lap per yard throughout this lap if the evener has to be constantly jumping back and forth, because the evener only acts as the thick and thin place is passing its weighing point, and if a lump

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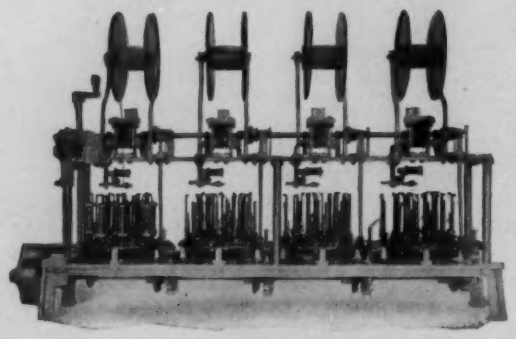
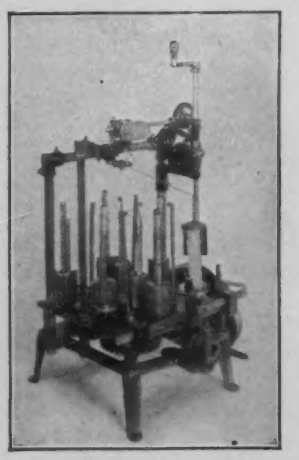
Double Deck Wire Braiders
Triple Deck Wire Braiders
Coir and Matting Braiders
Rug Braiders



Flat Diamond Braiders
Flat Hercules Braiders
Oriental Soutache Braiders
President Braiders
Wicking Braiders
Cross Braiders
Stripe Braiders
Pleating Machines
Miscellaneous Braiders
Single Deck Winding Machines
Double Deck Winding Machines
Taping Machines
Measuring Machines
Calendering Machines

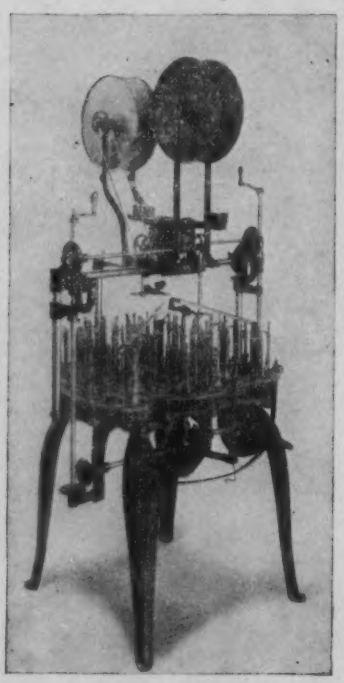
4 Head Machine

One main driving shaft and frame. Any one or all heads can be run independently. Saves floor space, labor, belting and maintenance, in addition to increasing production.



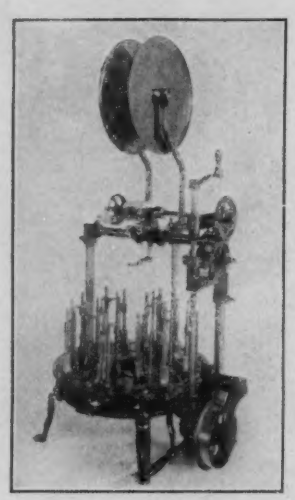
Square Bench Packing Braider

A small braider to produce packing up to ⅜″ square. Large bobbins (2½″ x 6″).



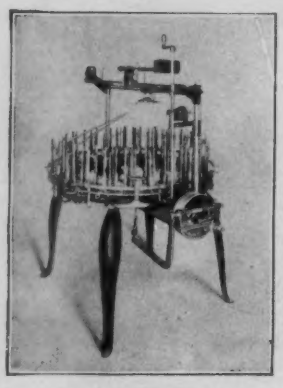
Duplex Braider

Runs two widths or two colors of braid at the same time. Any combination of flat braids can be run simultaneously; round or tubular braids can be run on the inner unit while flat braids are being run on the outer.



Round Bench Braider

Round Packing Braider



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or heavy bulk and then a thin place one after another is constantly passing this point of weighing and the evening, it is going to be delivered somewhat thick and thin, because the cone belt has to shift back and forth under a certain amount of friction before it comes to a dead standstill; it then has to undergo the same movement back in the opposite direction under its same belt guide friction.

To get a lap as even as we can, we must start at the hopper of the breaker lapper and see that the feeding aprons are tight enough to allow no slip on the pulleys that carry them, for it can be guessed what would happen if the spike apron should stall a little once in a while. It will mean the same if the apron is slipping at the hopper. This gives uneven feeding and the evener is the only place that's left to catch. Another important thing is to have the hopper kept as near one thing in fullness, not getting too low and then too full at times. The doffer should not be set so far off from the points of the spike apron that there will be big lumps of cotton going over that should be struck off by this knocker or doffer. Those three things will overtax the eveners and cause them to be jumping first one way and another, keeping them constantly moving under a strain of friction first one direction and then another.

What is an evener anyway? Can anything be put on a pair of scales, kept continually moving and weighed correctly? I cannot do it. The hand must come to a standstill in order to discern the correct weight. It is the same with an evener. First, the breaker laps should be as perfect as possible, then one should be unrolled out on the floor, inspected yard for yard, weighed yard after yard and made right first, then taken to the finisher or intermediate, seeing that the apron works freely with no bind in it anywhere. Disconnect the gear, take all laps off of the apron and tighten it so that it will not slip, but do not get it too tight so as to cause a friction on its bearings or the rollers. Then pull it around by hand and work it until it is at its easiest point of movement, then take out the feed rolls, clean the bearings and oil them, and the apron bearings thoroughly. Do not tighten the springs, that hold the feed rolls down, too tightly but get them tight enough so that the beater can't pluck the cotton in from between them, then gear the apron and feed rolls up and get after the evener, seeing that it works as freely as possible, but do not have lateral play in any of its pivot joints. Clean the evener shoes where the cotton passes over and put graphite or black lead on them to make them slick and work easily, but the shoes should not be oiled, for oil will catch the cotton and gum them up.

J. F. L. (ALA.)

Anent Card Grinding.

EDITOR COTTON:

Cards and pickers being my hobby, I was well pleased when I received my copy of the May issue of COTTON.

Honestly I can say that I am not prejudiced against any other department in the mill, but am only upholding justice to all departments and to the management. Each department is absolutely necessary to produce the goods which are being made, and each should get its proper share of expense money.

All mill men know that cards are very important machines in a mill. For a mill to run well, good carding is necessary. That conceded, why is it that card grinders as a rule are under-paid? Very rarely do you find a card grinder receiving as much in wages as a loom fixer or even a section-man in the spinning room. He is a skilled man in the highest sense. He deals in space to the thousandth part of an inch. He must have good hearing as well as good judgment. Bad work on his part will show up all through the mill to the disadvantage of the remaining parts. Is he less important than any other section man?

I once heard a superintendent say that a card grinder could be trained over-night. He knew very little about cards. In fact, he knew such a little about carding that when the overseer complained one day about his drafts not being equalled up right, he told the overseer to open up some more windows. When I learned to grind cards I gave up a set of frames and cut my pay $7.50 per week for the privilege of learning. Nor did I learn overnight. Every day for weeks and months I learned something new.

A green card grinder, in my opinion, can cause a mill more expense than any other section man in the mill. Card clothing is expensive, and so are flats. By a bad break of judgment or neglect he can ruin a card. It takes time and money to replace it. It cuts production which is also a loss. As a rule, where a mill underpays its card grinders it has inexperienced men. Many times there is a great deal of labor turnover by the men seeking better paying jobs when they gain more knowledge and experience, therefore a new man must be trained at the expense of the company, or an inexperienced man secured from some other under-paid job. Why not pay the grinder as much as the other section men, give him the supplies he actually needs to run his job, and he will stay on the job unless he has the offer of a job as second-hand or some other kind of promotion. No mill can run prosperously and be kept in good conditin without supplies. Every department should have what it deserves, but no one department should be permitted to be "piggish" and get all it wants and the others suffer.

M. L. B. (S. C.)

Future Manufacturing Possibilities.

EDITOR COTTON:

During the last thirty years or so, cotton manufacturing methods have been at almost a standstill, with the exception of minor improvements of machines and systems already in use. Within the next fifteen years, we are destined to see the present methods of manufacturing revolutionized. While I don't pretend to be a prophet, or a mind reader, still, if you promise not to laugh, I'll give you my ideas on some of the changes that I think will take place.

We are going to see a big improvement in opening devices. All picking processes will be eliminated, resulting in longer fibers in the finished yarn. That is, there will be a minimum of damage done to the ends of the fibers.

The card will be with us probably as long as cotton will, but it will be greatly modified. Probably so much so that we shall need an introduction to it. Instead of picker laps, the cotton will be delivered loose to cages, then taken in by a much stronger licker-in. This stock will pass through a double-cylinder card, the first cylinder being equipped with very strong wire, capable of doing much more cleaning than the wire in use at present. The sliver made will be

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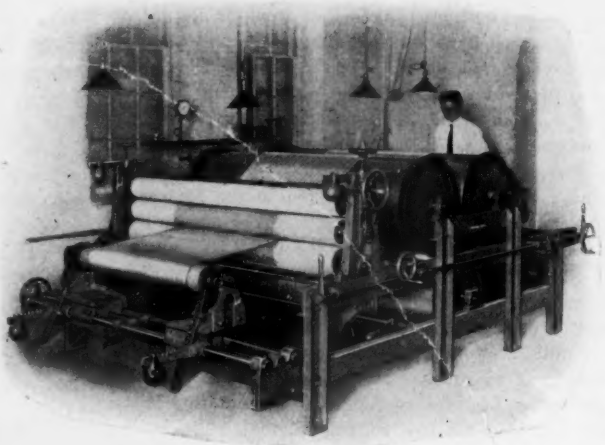

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very light, and will be run directly through the spinning frame. The spinning frame to be built will have very large bobbins, capable of running for days instead of hours, as at present. The results will be better and stronger yarn, for a fractional part of present costs.

Our looms of the present time will be as obsolete as hand looms in ten years. The eye will not be able to keep up with the speed of the lay.

You are probably saying by this time, "That guy is nuts!" but don't shoot yet. We are handling cotton altogether too much as is evidenced by the fact that fibers taken from a piece of finished goods are practically lifeless. There is certainly many a good bale of cotton ruined before it ever leaves the picker room. All you need to do to find out for yourself what the blade beater does to cotton is to throw your shirt in at the back of the picker, then run to the front of the machine and wait for it to come out.

Possibly some will wonder how we can feed directly to the card, instead of using an even sheet of lap from the pickers. But we have to form this even lap by using a pair of cages and rolls, do we not? Then what is to prevent us from using the cages directly in back of the card and forming one continuous lap directly on the nose plate?

Why the double cylinder in the card? Because the stock will eventually be combed clean, instead of having the foreign matter knocked out of it with beaters. To do this more cylinders will be required, and these will be built into one machine to save floor space and additional labor.

Also, why the stronger licker-in? Because the licker-in is a wonderful combing device, not fully appreciated by fifty per cent of the carders. The licker, in a few years, will be utilized to do a great deal more cleaning nad combing of the stock than it does at present. It will be of better construction to take care of this added work.

The only thing that worries me about all this is, what shall we have left to argue about when we discard the bobbin-lead frame? Ye gods!

However, if Providence had endowed me with wealth instead of sex appeal, I think I should have been tempted to do a little experimenting as a sideline. Even if none of the foregoing ever materialize, so to speak, at least you have to admit that it makes a wonderful Bed-Time Story.

C. C. (N. J.)

Management and Diplomacy.

Editor Cotton:

There is one highly important element in the successful management of a section, department, or entire cotton mill, which is seldom discussed in the "How Other Men Manage" department of Cotton. This problem has meant the success or failure of mill men who were otherwise very competent, so perhaps a few paragraphs concerning it may open a very valuable discussion. The problem is that of handling the help.

Personally I have encountered several different systems in my experience. I have seen actual running conditions and worked in the departments under overseers so very genial and friendly that the help took advantage of their good nature. On the other hand, I have worked for such strict martinets that every hand in the room lived in constant fear of his job. Both of these extremes made the workers dissatisfied, impatient and lax in their duties.

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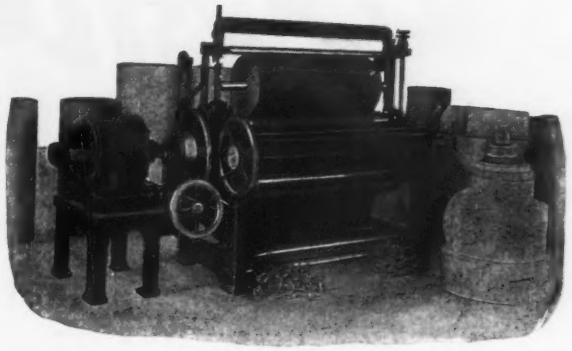
ROLL-WINDERS



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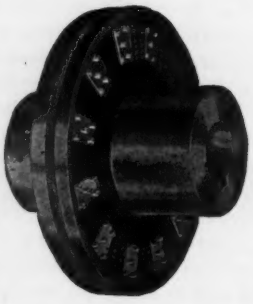

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BELTING MANUFACTURERS

I know that many men who grew up in the mills of twenty years ago will scoff at all "sentiment" regarding the help, who believe that a heavy hand and a ruthless insistence on even minor matters are strictly necessary to the successful management of a cotton mill or any part of it, but if these gentlemen will bear with me a few minutes I will try to present another viewpoint.

In the first place, conditions are much different today than they were twenty years ago in regard to the type of cotton mill help. In the old days, with unrestricted immigration, ordinary help was very plentiful, and another hand was always waiting to take the place of one who had quit or been discharged, but today it is more difficult to obtain help, especially in communities where there is but one cotton mill. This is an obvious truth, that all practical mill men know; yet many managers of help choose to disregard it, and believe a hand well rid of who refuses to stand for their domineering manner, regardless of the increased cost or labor turnover. And the character of cotton mill help is vastly improved today. The immigrants, often coming from practically servitude, felt such an improvement in their condition upon reaching America that they were able to endure the dictatorship of old-time overseers without annoyance, but now-a-days, with the greatly improved standards of living, and the widespread conception that all men are equal and all should be treated decently, due perhaps to common service in the war, and due to the much more general education and the fusing of the sons and daughters of these immigrants into Americans, the men and women employed in the mills today are much quicker to feel indignant and angry at unjust treatment.

How many overseers dare use profane language in reprimanding help today? And how common was the practice twenty years ago!

There are men, of course, who seem to be holding down their jobs very well by treating the help in a high-handed, sarcastic manner; but actually they are not making a success. With the workers angry, fearful that they will lose their jobs and indignant at the treatment accorded them, many, many things occur that mean wasted money for the mill. For instance, the labor turnover will certainly be high, even though the overseer can explain this away to the superintendent by telling of local conditions. The superintendent has no standard to go by and often will let the matter slide rather than make a disturbance in the case of an otherwise satisfactory overseer, but the cost of breaking in new hands, in bad work, lowered production and wear and tear on the machines, is going on nevertheless.

If the help are antagonized by their superiors they will do only that which is required, and in view of the fact that an overseer cannot see everything, and neither can a second hand or section hands, many things will be done in a half-hearted manner. In other words, the domineering, sarcastic overseer destroys the *workers' pride in their work.*

On the other hand, the too easy-going, friendly overseer has a very bad room. We all know of such conditions, especially in mills making coarse goods where wages are low. Every person in a cotton mill is dependent on the others for good work, and all must be in absolute adjustment to the others to produce flawless products. Every overseer knows how a boy on a drawing frame can make seconds in the weave room or cause rejected lots of sale yarns, and how every person in the mill must produce

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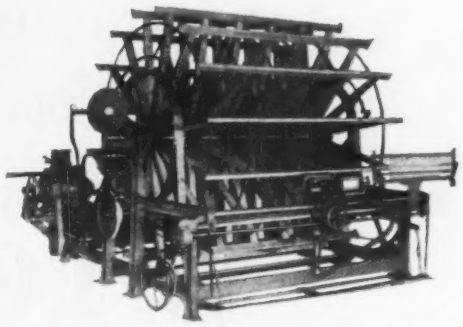

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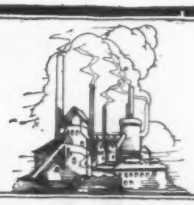

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good work to make possible good work in the succeeding process. But if the overseer is lax, and does not enforce strict discipline on every hand, good work cannot be produced. This is so obvious we need not discuss it further. In some cases overseers say they absolutely cannot keep help on the job unless they let them do as they please, and this brings us to the meat of the whole problem—how to enforce discipline without antagonizing the help.

My own belief is to appeal to their pride in their work. Every man or woman, regardless of the meanness of the task, likes to feel that he or she is competent, as good as may be found and superior to the average. This is a trait of human nature. We all have it, even though we deny it sometimes. In your own case you will take pleasure in feeling that you are giving satisfaction to your superior, do you not? Possibly you have become embittered by the unjust treatment of your superior, but at least you like to think you are better than the average man in your position. Everyone does. Then why not use this trait in others to make discipline easier and the work better?

Instead of continually issuing absolute orders or commands, suggest changes you wish to effect. Seem to defer to the workers' opinion, and you will find on your next trip around the room that he is doing as you wish. It is absolutely necessary, of course, to give direct orders, but cut the number of them down as low as possible. Seem to talk the matter over with him, but present your view in such a reasonable light that he will make an effort to please you. In this way you win his approval, and then he is easy to handle. Of course in every room there is an incorrigible, but you will have to get rid of him sooner or later anyway.

With a worker feeling that he is as much entitled to decent treatment as anyone, this procedure brings the best results. At least I have found it so.

I hope other men will give their views on this very important question of handling help so we can all get the benefit of their experiences. P. E. P. (N. H.)

Changing a Comber Waste Percentage.

EDITOR COTTON:

The readers of this department will, I think, agree with me that combing is a very important factor in the manufacture of fine yarns; then why don't we have more about this machine in the pages of COTTON? I am sure we all derive benefit from other processes discussed in the pages of this magazine, at least I have, and I am anxious to know more about combers and combing.

One thing I have in mind at the present time could be discussed from several different angles. I will give my own and should be glad to have the opinions of others. Take, for instance, the Nasmith or Whitin-Nasmith comber. How would the reader alter his waste percentage? I ask this question because I see so many who alter it by the detaching motion, in one case detaching as late as two on the index wheel for the backward motion, which brought the forward motion as late as ten. I inquired as to why this was done and was told that if the detaching roll backward motion began at one it carried the already combed cotton down into the path of the half lap, or rather into the half lap, before it had passed this point.

For those who do not know, the builders of these machines claim that the backward motion of the detaching

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roll should commence at one and the forward motion at nine on the index wheel.

In my opinion to start at one is correct and I am prepared to give my reason for so stating. We know that by detaching later we take out less waste. Why is this so? My theory is that detaching on the forward motion has a tendency to pull the partially combed fleece, through which the half lap has just passed, up into the needles of the top comb. Therefore, by detaching later than one and nine the fleece is not brought into contact with the top comb until it is very near the tail end of the fibers. This will make less waste by allowing much to go through that should be waste, but that is not proper combing. We do not run combers just to make waste. If, in this case, the nipper plate had been brought nearer to the detaching roll and detached at one, the required percentage of waste would have been secured, and I believe better combing would have resulted.

If any of the readers think that I am wrong I should very much like to hear from them, because I believe we are all misguided at times and make mistakes.

W. O. R. (CONN.)

Another Remedy for Yarn Breaking.

EDITOR COTTON:

I wish to submit another remedy, in addition to those given to "C. and S." for the breaking of threads at the spoolers. Of course there are other things which need remedying also, but there is one thing which can be done at the spoolers which will overcome some of the trouble if your correspondent is not prepared to do all the other things suggested to him through the columns of COTTON.

Leave off the first spool at the left, using the first spindle, swing the yarn out to this spindle, which will have a lean to the right, taking it through the wire guard on the bobbin holder instead of out and under as is the usual custom in spooling. This will not only make it spool better, but will take out a great percentage of the stretching of the yarn, will make it go better on spooling and in the finish will give a yarn that has more elasticity in the yarn.

The writer was very much amused sometime ago when a salesman came along with a patented device which he claimed would put more yarn on the spool than I was putting on, and after hearing all the advantages this device had over the old method of putting more yarn on the spool, I informed him that we had just adopted a plan by which we were *reducing* the number of yards of threads that were to be put on the spools by allowing less tension to be put on the spools and that we were finding that the yarn would run better on the slashing and weaving, that we retained a greater amount of elasticity than before and that it ran on the warpers and slashers like a different number of yarn, because it showed up stronger or stood more before a breakage occurred.

Of course, as I said at the beginning, there are numerous other things in connection with the foregoing which have their effect on the yarn, causing yarn to appear weak and to break at the warpers, but this is a part of it; also the knotters and the way they are tying the knots will have its effect in the way of slip knots and in letting the spool start off quicker, or quick enough to take up the slack or "kink" that appears when all knots are tied by the spooler hand. This, by all means, should be very carefully watched; if not, there appears a loop or kink at nearly every knot tied in letting the spool loose and in taking up the yarn and starting unwinding of the warp bobbins on the spoolers.

This is getting somewhat off the subject, but at this point the writer finds space to mention these things, which are very important at this stage of the operation of the warp yarn on the spoolers. Another very peculiar coincidence presents itself along this line of operation in the spooling department, making the yarn run better, and that is, never let the spooling appear to be behind with the spinning room. If there is any surplus of yarn which has not been spooled it should be out of sight of the spooler tenders. Overcrowding of the spoolers will, in a sense, make it look as if the spoolers were running bad, when they are not. The spooler tenders should be supplied with just enough to keep them from appearing to be behind with the warp frames in doffing.

T. A. D. (Ga.)

Working Waste.

EDITOR COTTON:

I see in the June issue of COTTON where the Texas mill men discussed, among various other subjects, the reworking of waste.

The writer has tried about all methods known to mill men, but finds that feeding the waste by small handfuls direct into the automatic hopper gives the best results. For instance, we place a box of lap waste from the spinning room behind the hopper, and every little while the picker hand scatters a couple of handfuls in the hopper. By so doing, the waste is distributed as it should be and this slight amount is lost to the naked eye and does no harm. We use up all waste in this manner.

When a waste machine is used, this extra process weakens the fibers still more. The less the waste is handled the better the results.

WASH (R. I.)

The 1926 edition of the Year Book and Cotton Manufacturers' Manual of the National Association of Cotton Manufacturers, 80 Federal Street, Boston, Mass., has been issued. As usual, the Association has brought this important reference book up to date, a practice which has been excellently followed during the years of publication, this being the ninth volume in the series. Believing that the statistical and technical sections of the book represent the greatest importance as references, the Association has put these sections in the front part of the book, and the membership list, condensed into one alphabetical list, is located in the back part of the book.

Following the policy of adding fundamental statistics and technical data, among the new information incorporated in this edition are data found under the following heads: "Activity and Normal Operation of American Cotton Industry, Consumption and Stocks of Cotton by Kinds, Use of Rayon by Industries, Conversion Tables for Converting from Centigrade to Fahrenheit and from Denier to Cotton Count, and abstracts from the Silk Association Buying Rules.

"Nothing is so difficult to do as to do nothing."

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B-Vertical Floating Striper and Dot Machine

***B-6 Machine**

***B-7 Machine**

THESE machines offer a variety of styles and colors to meet all demands.

Simple patterns may be produced on these machines as well as the more comprehensive styles containing a multiplicity of colors, checks, dots, etc., incorporating in one machine the advantages of all these desirable features.

*Models B-6 and B-7

These machines are built with six and seven yarn feeding fingers, respectively. These machines are of floating vertical stripe design. The vertical stripes are produced by groups of knitting needles knitting with one or two yarns used for plaiting, thus producing a perfectly clear and positive vertical stripe of a greater width than can be produced with reverse plaiting needles, particularly when using worsteds or soft yarns on coarser gauges.

The vertical stripes can be located throughout the circumference of the stocking as desired, by the use of jacks under the needles to produce the vertical stripe of the width desired.

These machines will produce repeated horizontal stripe patterns of any design up to 48 courses, if two or more course width stripes are desired. Repeated patterns up to 24 courses can be made if single course stripes are incorporated in the pattern.

The vertical striping attachment on these machines is so arranged that when making plaids or checked patterns small squares can be inserted in the middle of the check or vertical stripe.

The above machines can be set up for either men's half hose or ladies' hose, if desired.

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The Three-Thread Overlock Seam

BY WILLIAM DAVIS, M.A.

The three-thread overlock seam has been connected with one of the noteworthy developments of the knitting industry, particularly since the knitted texture came to be adapted to so many uses for outer wear. The two-thread overlock seam is very useful and has been well known in the knitting industry in connection with the assembling of undergarments made on the cut-up or circular principle of manufacture and the three-thread overlock seam has been evolved on the same system to cope with the increasing demand of the knitted fabric for outer wear.

The two-thread overlock seam is still largely used for certain grades of outer garments as well as under garments but it has certain drawbacks for many grades of goods. When the two-thread seam is subjected to strain it yields and if the strain is excessive it often opens or gapes, going back again when the stretching force has been removed. This tendency to gape on the part of this seam is a disadvantage in outer garment manufacture as it shows things up and moreover it gives an appearance which is not always desirable. The wearer likes to feel that his apparel is secure against the outer world and for such garments he demands a seam or joint which will remain rigid and firm.

Now the overlock seam with two threads is very elastic and is less bulky than the three-thread seam, which commends the two thread for many purposes of underwear where the small fine seam is a desideratum of first importance. In outer garments however the fabric does not come into direct contact with the skin of the wearer so that the tenet regarding bulk is not so important. One might ask why it is that the lockstitch so largely adopted for woven fabrics should not be employed and the answer is that outer garments made from knitted fabric have greater elasticity than the woven types and when the strains of wear are imposed, the seam fabric yields and also the fabric around the join. If the join is made in the lockstitch, this variety has little elasticity so that the strain would require to be borne by the two sewing cottons and fractures would be frequent during wear. It is quite different in the woven fabric, because this texture, per se, is rigid so that it supports the threads when stresses are applied to the seams.

The structure of the three-thread overlock seam will be followed by examination of Fig. 1 which gives in detail the seam considerably magnified so that the convolutions of the various threads of the seam may be noticed. The two fabrics which require to be joined are indicated by *A* and *B* where they are noticed to be lying on top of each other; it should however be pointed out that this condition only holds good during the seaming operation for immediately the two edges are joined, they are drawn out so that fabric *A* is continuous with fabric *B* in the same plane. This action naturally causes the seamed portion to stand more or less erect at right angles to the fabric or thereabout.

Examination of the seam will show that there are three elements looping themselves together, the needle thread indicated by *NT* is given dotted as it passes the two layers of fabric edge, and locks below the edge and above it as shown. In this intersection one can further distinguish the thread of the first looper marked *LT1* above which is the thread from the second looper, *LT2*. All these members of the seam loop with each other in a manner similar to the knitted fabric itself and in a way may be regarded as a knitted fabric of three constituent threads linked to a knitted fabric base.

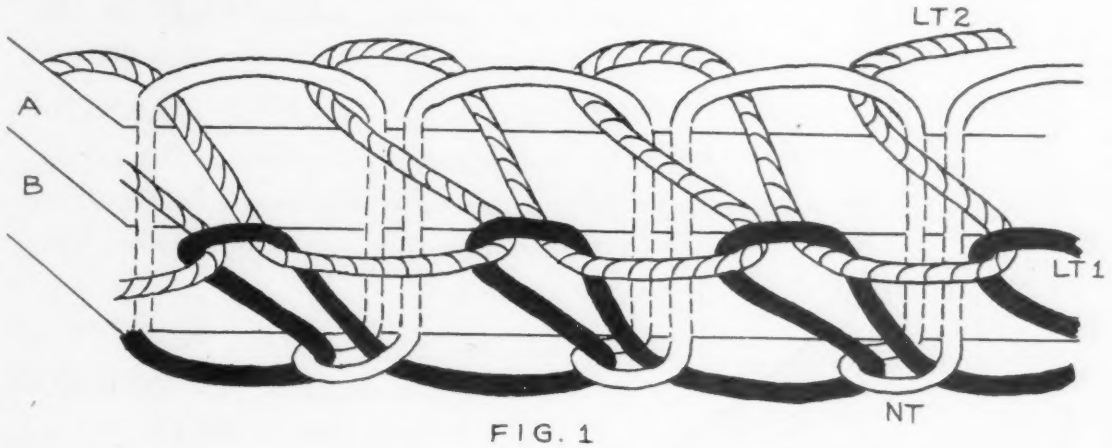

FIG. 1

The homogeneous character of the join with the fabric is one of the main factors in the success of this system of joining because the elasticity or yield of the seam approaches that of the fabric which it is uniting. At the same time the three-thread seam locking over the edge has considerable strength and although it yields with strain it always retains the perfection of join, there are no patchy places showing through. Dividing the seam over two threads which come round the edge gives a better cover to the selvage, the appearance is smooth and even and there is less necessity for the cotton thread marked *NT* showing through.

It is advisable to arrange that the cotton or needle thread should, as far as possible, be hidden in the center

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of the two plies of fabric as cotton beads showing through in white or cream, detract from the good appearance of a high class woolen article of outer wear. As can be shown however, there is very little extra outlay for such seams on account of increased length of sewing cotton, the initial cost for the machine being the chief extra expense. In this connection sewing machines are constructed on such a principle that the two-thread overlock seam may be converted to a three-thread seam at a few minutes' notice. The first looper divides its function over two members, one of which moves towards the right and the other moves towards the left. By a simple alteration it is possible to screw off the second member and substitute for it a looper which is provided with an opening to take a second looper thread so that the conversion from a two-thread overlock to a three-thread variety is soon complete. This system commends itself on account of the fact that the same machines can be utilized for different classes of goods and multiplication of equipment is thus avoided. In a large concern however where there is ample work for two-thread and three-thread overlock seaming, both kinds have to be installed.

Reference has already been made to the way in which the seam tends to stand erect to the main body of the

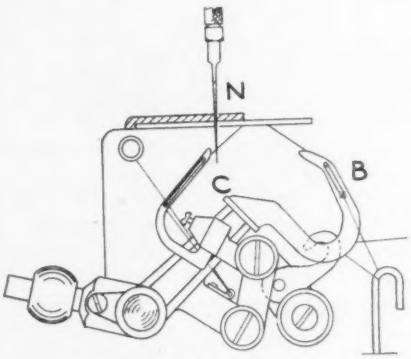


FIG. 2

fabric and particularly in coarser gauge garments the bulk of the sewing cottons and woolen threads, combined with the bite of fabric from the edge, gives in total a rather large piece of material right along the joins of the garment. One method to overcome this is to draw one of the looper threads tightly so that the seam obtains a kind of bias and this is afterwards ironed or pressed into the fabric. This is a help but in many cases it is found an advantage to do felling of the seam, by which it is passed into a second machine using the chain stitch which lays the erect piece absolutely flat and nails it down to the fabric by a definite line of stitching done on the chain stitch machine at a very rapid rate. This envolves the use of more equipment, and also a double handling of the garments, but, particularly in fine gauges, it has been found to give satisfactory results; the seams are strong and their apparent bulk is considerably reduced.

The details of making this seam on the Singer system are given herewith in Figs. 2, 3 and 4 where the various stages of the process are shown in the machine which is largely adopted in the industry. Fig. 2 shows the chief looping parts to be as follows: *N* is needle of the machine which pierces the fabric edge at every stitch in the usual manner. This needle has of necessity the usual sewing cotton because the aperture is so small that it cannot take a thick fluffy thread of the woolen or cotton variety. Such an ordinary type of yarn would not survive many minutes as the aperture of the needle would soon draw off the surface fiber and get clogged up. *C* is the first looper which is provided with a thread passing through its eye and pivoted so that it has a prevailing movement towards the right and back again. *B* is the second looper which is pivoted so that it moves upwards towards the left and back again. In this case also a thread passes through the eye of the second looper. All the threads,

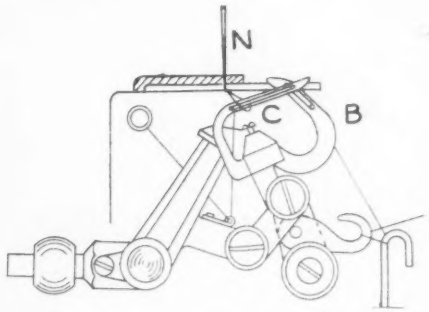


FIG. 3

that of the needle and those of the two loopers are in Fig. 2 shown attached to the fabric in connection with the last stitch in the seam.

The fabric is fed through in the usual manner by the feed dog and the edges of the fabric are laid in with the correct bite, that is the suitable distance from the edge, less in the case of fashioned goods than in cut articles. The various stages in the making of the three-thread overlock seam may be followed by examining the diagrams in Figs. 2, 3 and 4. In Fig. 2 the needle is seen to have penetrated the two plies of fabric and the first looper, *C*, is noticed

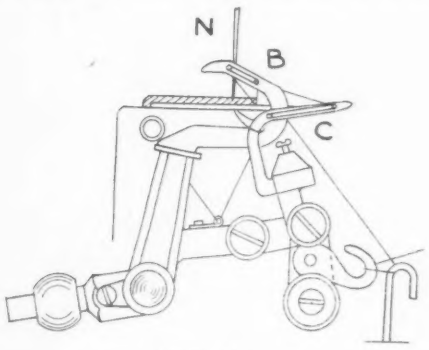
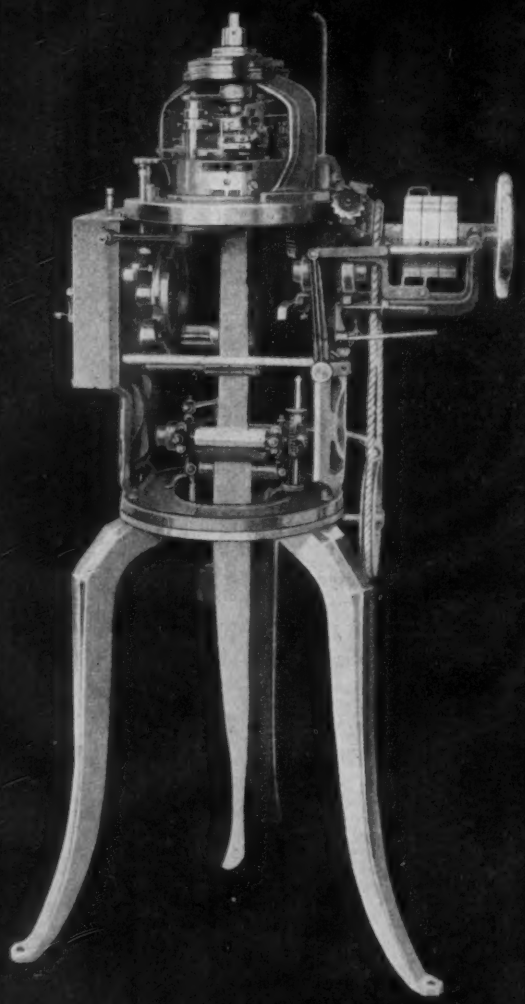


FIG. 4

to be waiting to push its thread through. In Fig. 3 the first looper, *C*, has moved towards the right and has entered the loop presented by the needle when it was through. The first looper cannot enter the needle loop until the needle is on the return journey for as it recedes, it leaves a slack piece of thread between itself and the fabric and this is the loop which the first looper, *C*, enters. But looper *C* has its own thread in the eye and in entering the needle thread it pushes its own thread through and this is noticed to be in full action in Fig. 3. The needle thread is seen



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to be well up the stem of the first looper, *C*, so that the looper thread is through the needle thread. In Fig. 3 the second looper, *B*, is noticed to be moving towards the left and to be in the act of entering the thread which has thus been placed in its path by the first looper, *C*. This action is noticed to be fully complete in Fig. 4 where the second looper, *B*, has moved upwards towards the left thereby pushing its own thread through that of the first looper, *C*. But it is here doing another thing, it is offering its thread, that is the thread of looper *B*, to be entered by the descending needle *N*. In Fig. 4 this is seen to be in active process, the looper *B* has reached its furthest point towards the left and is receding so that the needle which is descending to push its thread through the two fabric edges should on its way through penetrate the loop which has been carefully placed in its path by the second looper, *B*. Between the former stitch and the present one the needle is of course entering the new piece of fabric which has been pushed forward by the feed dog and this explains the apparently contorted appearance of the seam as given in Fig. 1 where the two looper threads are noticed to be lying across the edge in a diagonal direction.

An examination of Fig. 1 will further show that there are various ways in which the appearance of the seam may be altered as the three elements can be changed in tension within certain well-defined limits. Usually it is not advisable to do much alteration of the needle thread, and the desideratum is to have this in the shortest length possible without dragging it too tight. It is required to hide it between the layers of fabric but at the same time if it is drawn too tight, it will affect the elasticity of the seam and it may cut or break. The chief variation in tension may be made in the relative lengths of *LT1* and *LT2* in Fig. 1, and in the example the length of *LT1* is purposely made shorter than that of *LT2*. The latter predominates on the edge of the seam and if it is desired to use this principle as a pattern medium, then the colors can be made different and a two-color scheme arranged along the border. This principle has been adopted with quite good effect in edging certain kinds of knitted articles cut from web, the overlock seam covers up the raw edge, but when colors are introduced into the loopers in lustrous silk materials very attractive borders have been produced which help the article to make a somewhat different appeal to the wearer than the stereotyped article of apparel.

It may be of interest to give some particulars which have been derived from an exhaustive series of tests made by the writer in the amount of sewing and seaming thread required for this method of joining the edges of knitted fabrics. By watching the length of thread which passes through the members during the making of a given length of seam, we can obtain the amount of material which is required to produce a given length of seam and when the cost of the materials are known, it is easily possible, knowing the amount of seaming performed on any given class of article, to detail the cost of seaming on this type of seam. On one such test made it was found that the needle required 1.8 yards of sewing cotton to produce one yard of seaming, the first looper required 4.8 yards and the second looper 3.7 yards, giving a total of all three of 10.3 for the three threads.

Let one example be given of how the cost of this seam may be calculated. Let the sewing cotton be 3/60s cotton counts, $= 20 \times 840$ yards per pound and let the cost per pound of this be \$3.00; let the first looper thread be equal to 24s worsted counts $= 24 \times 560$ yards per pound which costs \$2.00. Let the remaining looper thread be of 18s worsted counts of which 18×560 gives the yards per pound and let the cost be \$2.50. The cost of say 1000 yards of seaming may be estimated as follows:

Needle thread 1.8 take-up $\times$ 1000 = 1800 yards at \$3.00 for 20×840. By proportion we have the following

$$= \frac{1800 \times 3}{20 \times 840} = 32 \text{ cents for needle thread.}$$

First looper has 4.8 take-up $\times$ 1000 = 4800 yards at \$2.00 per 24×560

$$= \frac{4800 \times 2}{24 \times 560} = 71 \text{ cents for the first looper thread.}$$

Second looper has 3.7 take-up $\times$ 1000 = 3700 yards at \$2.50 per 18×560 yards

$$= \frac{3700 \times 2.5}{18 \times 560} = 93 \text{ cents.}$$

All the items added give $32 + 71 + 93 =$ \$1.96 for thread per 1000 yards of seaming in this style of seam.

Let one type of garment have 56 yards of seaming per dozen garments, and on the above particulars the cost due to seaming materials alone would be proportionate, on the basis of \$1.96 per 1000 yards,

$$\frac{1.96 \times 56}{1000} = 11 \text{ cents approximately.}$$

Let us suppose that these garments are seamed first and then felled with the chain stitch, the felling thread being in 20s worsted counts and the cost \$1.75 per pound. Let the take-up be 4.5, that is 4.5 yards of thread are employed for one yard of seaming. For 56 yards of seaming the length of thread would be 56×4.5 and this will require to be taken proportionately at the rate of \$1.75 per 20×560 yards.

$$\frac{56 \times 4.5 \times 1.75}{20 \times 560} = 4 \text{ cents approximately per dozen}$$

garments due to the felling of the three thread overlock seam.

The true system of costing and cost accounting is that founded on the exact determination of every detail of the manufacturing routine and such calculations serve to put the system of seam costing on a definite basis. It may be said that such calculations give rise to surprise that the cost due to this item is so small, in many cases a much larger figure is allowed for by guesswork.

The Franklin Rayon Dyeing Company has been incorporated under the laws of the state of Rhode Island with the following officers: E. S. Graves, president; H. D. Evans, vice-president; and A. N. Dana, secretary. This new corporation is affiliated with the Franklin Process Company of Providence and Philadelphia, and will engage in the commission dyeing of rayon in the wound form. A new method of dyeing will be used which has been perfected after considerable research work. This method has a considerable advantage over skein dyeing in that it leaves the rayon in much better condtion and reduces winding cost, the company states.

The company will be located in the George E. Boyden plant at 86 Crary St., Providence, which it has purchased and will remodel and re-equip. Operations will probably begin in the early Fall.

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A hosiery top as knit on the Universal (after stretching)

The same top as above (note the stretch)

Acceptance of Defective Goods

BY LESLIE CHILDS

As a general proposition of law, the delivery of a defective installment of goods, which are to be delivered in that manner, will justify the buyer in refusing further deliveries. But, on the other hand, if the buyer accepts a defective installment, he may cut off his right to refuse other installments providing they comply with the terms of the contract.

It is obvious that this rule of commercial law is of great importance to buyers and sellers of goods to be delivered in installments. And, as an illustration of its application to a case arising in the textile field, the Arkansas case of Westbrook vs. Mente & Company, 282 S.W. 961, may be reviewed with interest and profit by textile executives in general.

In this case the appellee entered into a contract for the sale of 75,000 yards of burlap to be made into bags with the appellant. This contract was executed in August, 1920, and provided that deliveries should be made in monthly installments from September, 1920, to March, 1921, inclusive, upon receipt of shipping instructions from the appellant.

The appellant gave shipping instructions from time to time and shipments were made up to November, 1921, which was the last shipment ordered. This shipment left 45,000 yards of the contract undelivered, and the appellant declined to receive further installments under the contract.

Following this the appellee brought the instant action to recover damages for the breach of the contract by the appellant. In defense to this action the appellant set up that the shipments had not complied with the contract in several respects, which, it contended justified a refusal to receive further deliveries.

Now at this point it may be noted that the appellant accepted and paid for all the installments received. And further, that appellant made no complaint as to the quality of the material after acceptance of the last shipment in November, 1921.

On this state of facts the trial court directed a judgment in favor of the appellee. From this an appeal was taken to the higher court, and here, in stating the general rule, as to the effect of the acceptance of a defective installment, on the right of the buyer to reject subsequent installments, the court said:

"The correct rule of law has been recognized by this court to be that, in a contract for the sale of articles to be delivered in installments the purchaser cannot accept a delivery, even though it does not conform to the contract, and thereafter refuse on that account to accept other deliveries which do conform to the contract, but that the fact that the purchaser has accepted an installment falling short of the requirements of the contract does not require him to accept other installments which do not meet the requirements of the contract."

Following the above statement of the general rule, the court directed attention to its application to the facts of the instant case. In this connection the court, among other things, said:

"If the appellant had refused to accept a shipment of bags which failed to come up to the requirements of the contract, he would have treated the contract as broken and refused to accept others, but he waived that breach by the acceptance, and treated the contract as being still in force.

"There was no testimony offered tending to show that appellee refused to ship bags of the kind and quality specified in the contract. All that the offered testimony showed was to the effect merely that the bags which were accepted were not in compliance with the contract, and, as we have already stated, there is no testimony that appellant ever made any complaint after the last shipment, which he accepted.

"Hence the testimony does not warrant an inference that appellee's attitude was one of refusal to comply with the requirements of the contract with respect to future shipments. We are of the opinion, therefore, that the court was correct in excluding the testimony offered by appellant in regard to the defective quality of the bags which were accepted.

"The undisputed testimony in the case was that appellant waived the defective condition of all the bags that were shipped, and that he broke the contract by refusing to accept any more deliveries. Liability of appellant being established by undisputed evidence, there was no error in the court's giving a peremptory instruction. * * *"

In conclusion the court affirmed the judgment of the trial court in favor of the appellee, the seller. Holding as outlined in the opinion, that the appellant, the buyer, could not claim the right to reject future installments for the reason that the installments accepted were defective. In other words his acceptance of defective installments cut off his right to reject future installments, unless they were in fact defective.

The foregoing case is obviously one of force and value on the question decided. And, when the facts involved are taken with the language of the court in stating its holding, it constitutes a worthwhile exposition of the possible legal effect of the acceptance of a defective installment of goods, on the right of the buyer to reject subsequent shipments. Truly the case is one that textile executives in general may well have in mind when dealing with contracts of sale of this character.

In response to the demand for a simple and inexpensive device to distinguish real silk from rayon and to distinguish pure wool from its substitutes, the Ren-O-Scope textile indicator has been put on the market by the Ren Mfg. Co., of 30 Mt. Vernon St., Winchester, Mass. The Ren-O-Scope, it is pointed out by the makers, does its work without injury to the fabric and makes burning unnecessary. It distinguishes clearly between silk and rayon, and in the case of weighted silk, it indicates the degree of loading. It also distinguishes plainly between pure wool and cotton, and in the case of mixture, it indicates the proportion of the mixture. Finished garments as well as piece goods may be subjected to these tests. It operates on a scientific principle which has the approval of textile experts both in Europe and America. There are no delicate adjustments. No skill or technical knowledge is necessary to operate it. The results are claimed to be definite and reliable.

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Worsted Hosiery Yarns

BY J. B. LANCASHIRE.

Worsted yarns suitable for the weaving trade rarely, if ever, meet the requirements of the hosiery manufacturer. Usually, even soft weft yarns have too great a degree of twist to show the best results in knitting. Yarns are required which combine certain properties of typical worsteds with characteristics more generally found in woolens.

Hard-twisted yarns and those of a harsh and wiry nature produce imperfect knitted fabric. The wales, instead of lying straight, have an irregular racked appearance. Cheap fabrics, knitted from low worsteds, nearly always show this defect to a more or less extent. The same low-quality worsted yarns also have a tendency to spring from the head of the needles during loop formation. Lubrication with a mixture of soap and vegetable oil counteracts this tendency, and also, by making the yarn more plastic, helps to overcome the wale distortion defect in the fabric. Lubrication, however, is often inadvisable, and should not take place unless absolutely necessary.

Very soft twist is best for hosiery purposes, for, though soft-spun yarns are lacking in strength, they possess other characteristics of greater importance to the knitter. Great strength is unnecessary; the action of knitting does not subject the thread to much strain if well-wound bobbins are used, pot-eyes are clear from lint, and the thread is not bent at sharp angles as it is fed to the needles.

Frequent knots are decidedly objectionable, but the trouble they cause is minimized if the tying of weaver's knots is rigidly enforced. In any case, round knots should be avoided. Unwieldy knots limit the usefulness of a knitting machine which is largely decided by the range of yarn counts it will accommodate. The smaller the knots the thicker the yarns that may be safely employed. Beyond a certain point, even weaver's knots may cause holes in the fabric. To overcome this, it is not uncommon to employ two independent single yarns instead of a two-fold yarn. Two single strands of 28s will work together on a machine which will not take a 2/28s. This practice is open to some objection in view of the fact that the single 28s will, ultimately, be harder twisted than the individual strands of the doubled yarn.

Slubs and burrs in the yarn considerably hinder production when worked on machines possessing delicate stop motions; on machines without stop motions, slubs are liable to cause "press-offs." These faults are most common in the poorer qualities of single dry-spun yarns.

Excessive variation in yarn diameter gives rise to a defect in knitted fabric known as"cloudiness." Thick and thin places show up to such a marked degree that the knitting machine is gradually superseding the velvet-covered board as the medium of testing the uniformity of yarns. This accounts for the unreasonableness of hosiery manufacturers in expecting an almost perfect uniformity even in low-priced yarns.

Desirable Characteristics of Hosiery Yarns.

There is no need to further emphasize the desirability of even, regularly-twisted yarns for hosiery purposes. Scarcely less important is the question of covering power. In this respect the ideal hosiery worsted should be more of the nature of a woolen yarn. Goods are often required light in weight but full and solid in appearance. This necessitates the use of yarns with good covering properties to fill up the loop interstices.

Softness, so essential in underwear from the wearer's point of view, is a valuable asset from the knitter's point of view alike in all types of worsted yarn, whether to be used for underwear, hose, or outerwear. Other desirable characteristics include pliability, hygroscopicity and elasticity.

Some of these characteristis are common in all classes of wool, others are more marked in some wools than in others, but all, with possibly one exception, are materially affected by the method of spinning and by the amount of twist introduced in the final operation.

While it must be understood that the hosiery trade absorbs a large variety of worsted yarns, some differing only slightly from those used for weaving purposes, the most satisfactory knitting yarns can only be spun by using specially-selected wools and subjecting them to such treatment as will give even yarns of maximum bulk and softness.

Raw Material and Methods of Spinning.

Bulky wools are eminently suitable for the production of full, soft-handling yarns. Hence "skin" wool may be employed with advantage, provided it is blended with "fleece" wool, to give elasticity and softness. The harshness of "slipe" wool detracts from its value for hosiery purposes, thought it is used in low qualities. Of the "fleece" wools which give the best results, the "Puntas Arenas," "Cape," and "B. A." varieties are the most important.

For dealing with short, weak wools, French spinning machinery is generally employed. The Heilman comb rejects only the very shortest fibers, and the short fibers retained in the "top" help to give bulk. As no twist is introduced in the drawing operations and worsted mule frames are used for the actual spinning, a thread is obtained as soft and full as possible. Longer and stronger wools may also be spun on the French system, but the English system can be adapted to give equally good results.

There are four standard types of hosiery worsted yarns, viz:

1. Worsted and crossbred yarns.
2. Fingering yarns.
3. Cashmere yarns.
4. Botany yarns.

Worsted and Crossbred Yarns.

The term "worsted," as applied to hosiery yarns, is usually restricted to those of low and medium quality, up to 58s top. Worsted and crossbred yarns are spun on the English system from oil-combed tops. Worsted only differ from crossbreds in that they may be spun from tops of lower quality. Open drawing machinery is not uncommonly employed for coarse yarns. Fine yarns, and those spun to a count approaching the quality count, are more suitably drawn on the "Cone" system. The spinning may take place on flyer, cap or ring frames.

Single yarns of this type are hardly if ever used. The folding together of two or more single strands insures

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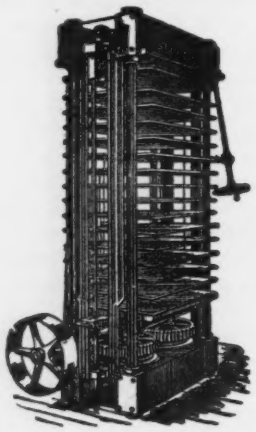

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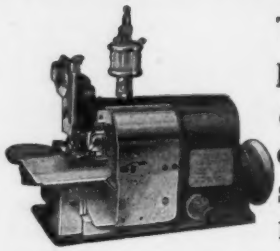

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greater regularity and better covering power. The direction of twist in the single is almost invariably anti-clockwise. The final twist usually just balances the initial twist. In the case of a typical 2/22s worsted, 50s top quality, the singles, spun on a cap frame, are given nine turns per inch. In doubling, which takes place on a ring frame, 4½ turns per inch are introduced in the opposite direction. The resulting thread lies straight and has no tendency to curl.

Threefold and fourfold yarns are fairly common for the manufacture of coarse half-hose, golf hose and outerwear.

Fingering Yarns.

The only distinctive feature of these yarns is that they are spun on flyer frames, which produce smoother yarns than either cap or ring frames. Like worsted and crossbred yarns, they are spun in oil on the English system, and folded, but they are, as a rule, of softer handle and bulkier appearance.

Cashmere Yarns.

These yarns are spun on the French system from what are termed "dry-combed" tops as distinct from "oil-combed" tops. The tops are generally combed in oil; the oil is removed afterwards by backwashing, and no further oil is added. The tops are allowed to mature before drawing and spinning take place. The twistless roving produced by porcupine drawing is finally spun on the mule frame with very soft twist. Dry spinning gives a softer and bulkier thread than is obtained by spinning in oil, at the expense of strength and durability. As a result of the use of cashmere yarns for the fine knitted outer garments, the term "cashmere" has lately been applied rather to the fabric than to the yarn.

Botany Yarns.

The term "botany" is now commonly used to designate dry-spun yarns and also many yarns spun in oil, and that quite independent of the quality of top from which these yarns are spun. It should, strictly speaking, be reserved for yarns spun, either in oil or dry, from 60s top quality or above.

A large variety of color and fancy mixtures are now used for knitted garments. The true mixture yarns are less popular at the present time than the marls. The single marl yarn—a yarn spun from two rovings of different colors—is occasionally used, but to nothing like the same extent as the mock marl. This is a folded yarn having each component thread of a different color. A very soft twist is introduced in doubling, the mixed color effect is apparent even at a distance. Artificial silk and wool marls find a ready market. If used in the "grey," they can be cross-dyed after knitting to give any desired two-color effect.

Artificial silk and wool may also be blended in the fibrous state, and if the synthetic fiber is cut into short lengths the blended material can be spun upon a worsted principle. Natural silk from broken or tangled cocoons can be utilized along with wool in the same way. These union yarns possess the warmth, fulness and softness of hosiery worsteds combined with a decided luster, which adds greatly to their popularity.—*The Textile Recorder.*

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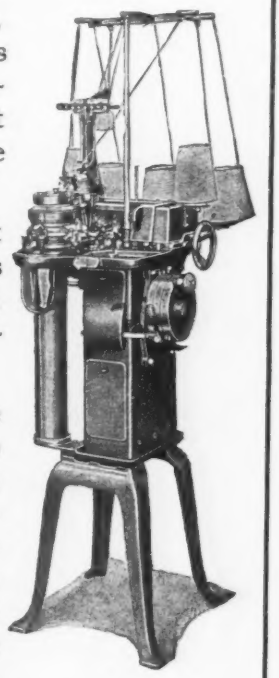

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Among the Knitting Mills

Contracts have been placed for 42-gauge machines of German construction for two more full-fashioned hosiery mills in Philadelphia, one of which will be operating late this year and the other early in 1927.

The William Brown Co., which in the last year increased their production of Granite brand hosiery by around 65 per cent will build a factory on a three-acre tract purchased from and adjoining the mercerizing plant of Boger & Crawford, where they will install 100 machines, bringing the total to 220. The new building will be the first unit in a group to be erected and will house a finishing plant. It will be of two stories and basement.

The Majestic Silk Hosiery Co. has a factory building in course of preparation for housing 14 machines, 10 of which will be 24-section leggers and four 28-section footers, all high speed. The president is James Kane, the guiding spirit in the Majestic Silk Hosiery Dyeing Co., the two enterprises to be under practically the same management. Earl G. Schwiendt is secretary and treasurer of the hosiery organization.

The Busy Bee Hosiery Co., Reading, manufacturers of men's and women's full-fashioned silk hosiery, is building an addition in which will be installed 42-gauge machines for approximately doubling the company's production.

Co-Ed Hosiery Co., Philadelphia, is installing, in an addition to the factory, 50 Reading full-fashioned machines of 42-gauge, 23 of which are in operation. The company reports being sold up to the end of the year, under a contract with a large direct-to-retailer manufacturing organization.

By operating a part of their plant overtime, the Apex Hosiery Co., Philadelphia, is turning off around 14,000 dozen pairs of full-fashioned silk hosiery a week.

A device for narrowing the toe of spring knit hose by the automatic dropping of needles as the narrowing proceeds, as in full-fashioned, represents an achievement of the Dexdale Hosiery Mills, Lansdale, Pa. Needles are eliminated until only 14 remain on either side of the opening to be closed by looping. There have been a number of demonstrations, proving the device mechanically perfect, and it is felt by the Dexdale management that when certain problems associated with its commercial practicability have been solved the first important step toward revolutionizing seamless hosiery knitting will have been taken. The Dexdale company manufactures both full-fashioned and spring needle hosiery and accepts no orders for distant delivery, but is "booked full all the time," says the president of the company, L. Schierenbeck.

Construction work has begun on the third unit of the Jantzen Knitting Mills, Portland, Oregon. The new building will be 100x100 feet, one story, and will be adjacent to the present factory buildings, one of which was completed only a few months ago. The new structure will be of steel and concrete construction.

The capital stock of the New Haven Silk Hosiery Co., Fort Wayne, Ind., is being increased from $200,000 to $500,000, to cover the cost of a building just completed and the installation of new equipment in it. Fred J. Rup is president of the company.

Monroe Hosiery Mills, Stroudsburg, Pa., has made application for a charter, those interested including Harry A. Feldgoise, Samuel E. Freedman and Tobias Goldenberg, all of Philadelphia. Five acres of land have been purchased, and it is understood a mill for the manufacture of women's full-fashioned silk hosiery will be erected.

Oakbrook Hosiery Company, Reading, Pa., has been granted a permit to erect a one-story factory building at an estimated cost of $3,000.

Gehman Knitting Mill, Baily, Pa., will erect a two-story addition, in which their production facilities for novelty half-hose will be expanded.

The sweater and bathing suit production of the Cadet Knitting Co. is to be taken over by the Martz Knitting Co., Manitowoc, Wis., a subsidiary formed by the company. This equipment will be transferred to Manitowoc from Chicago. N. L. Martz is president and treasurer of the new concern.

Hermosa Hosiery Mills, Inc., Hermosa Beach, California, have begun production on women's silk hosiery. John A. Ross of Los Angeles is vice-president, and David A. Russell, formerly of Chicago, is secretary-treasurer. David H. Young, president of the Golden State Silk Mills Inc., is also president of the new concern.

Alspach Knitting Co., Inc., Orwigsburg, Pa., has been negotiating with the business interests of Jasper, Ala., with a view to locating a plant there, it is understood.

A one-story addition is being erected by the Anderson Hosiery Mills, Anderson, S. C. This will be 24x70 feet, and bathing suits will be manufactured on the equipment to be installed. Further expansion of the bathing suit end of the business is planned for next year.

Underwear will be manufactured by Monticello Textiles, Charlottesville, Va. M. M. Henderson, of Norwalk, Conn., and T. Carlisle Crump, of Charlottesville, are interested.

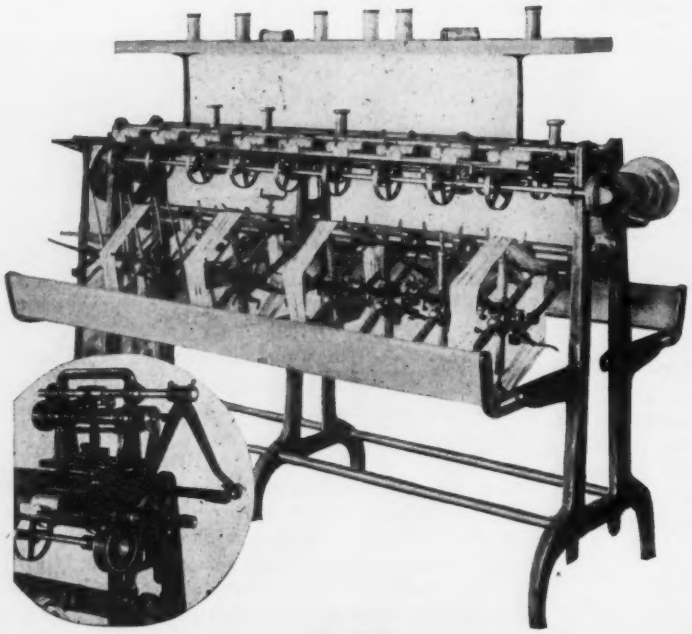
Hanes Hosiery Mills Company, Winston-Salem, N. C., has removed to its new plant. The new manufacturing building is two-story, 500x125 feet, and the dyehouse is two-and-one-half stories, 150x90 feet, with basement. Lockwood, Greene & Company were the engineers.

Pool Knitting Company, Sherman, Texas., is to make an extension to the manufacturing plant. Carl L. Pool is president.

An addition is being made at the Standard Hosiery Mills, Burlington, N. C. This will be of brick construction, three stories, 34x60 feet. Knitting equipment and winders will be included in the additional equipment to be installed.

A second story addition is being added to one of the buildings of the knitting department of the Wiscassett Mills Company, Albemarle, N. C. It is of brick and steel construction, and auxiliary manufacturing equipment will be added, according to C. W. Gaddy, manager and superintendent.

Modern boiler room practice is to use a single-acting, non-return stop valve on each boiler when the power plant consists of two or more boilers. A recent bulletin, Form 107, published by Jenkins Brothers, 80 White Street, New York, describes and illustrates the Jenkins automatic equalizing stop and check (non-return) valve made for that purpose. It is designed to contribute to boiler efficiency by equalizing pressures, and to boiler safety by preventing the accidental turning of steam into a cold boiler in which men may be working.



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ATWOOD

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Backing Yarn Kinks and Misses on Fancy Half Hose

EDITOR COTTON:

We are making a fancy half-hose on the Banner machine, with the horizontal striping attachment, and securing the vertical stripe with forward and backward hook needles.

We are having trouble with the backing yarn or inside yarn on the vertical stripe, missing, both in the two-ply and single yarns. When the finger drops in it makes a kind of kink and the yarn fails to fall into the needle.

Any information the readers of "Knitting Kinks" can give us as to the probable causes of this trouble will be sincerely appreciated.

S. H. (TENN.)

Kinks on the Loopers.

EDITOR COTTON:

There is one thing which I think will be of possible interest to the readers of "Knitting Kinks," namely, the neglect of minor operations in the manufacture of hosiery.

Some wise bird, at some time, said "It's the little things that count." Now the fellow who said that certainly must have been a knitting mill man. Some mills seem to have a tendency to neglect the looping. They just take this operation as a matter of course. Now looping is one of the biggest "little things" that the manufacturer runs across, especially in times of depression and heavy competition. It seems a shame to make a perfectly good hose and butcher it up on a looping machine. I think the most rigid rules in a mill should be in the looping department. Of course most superintendents will say, "Our system embraces the whole plant; we watch one department as closely as we do another." But that is not the point.

Is it not better to have a knitted third, second or mender than to pay the knitter for firsts and let the looper make waste of them? I think the farther the sock goes in process, the closer it should be watched. Naturally the farther it goes the more it costs. Three knitter thirds should be equal to one motor third. Now it has been sometime since I have worked on looping machines, but I remember a few little "kinks" that helped me out wonderfully.

Most all of us have had trouble with our trimmers. That is one of the biggest looping troubles. Some of the trouble is caused by not having the knives or trimmers properly ground, not set right, stroke off, binding, and many other things. I always set the lower blade flush with the brass, then I turn the machine by hand until the blade carrier is in at its fartherest point. Then I set the top blade so it will just cover the bottom one. Naturally, if the course is changed the top blade must be changed. I find that a few drops of oil right on the knives prevents the necessity of having to grind them so often. If there is a machine on which the trimmers have to be sharpened often just try a few drops of oil and it is surprising what the result will be. Understand, the oil must be on the *knives*, and should be stainless oil.

I also use a piece of emery cloth for polishing burrs off of the needle. It is much easier, and less expensive to polish the point of the needle than it is to put in a new one. In one mill I know of the looping department closes down every morning at 9:30 and every evening at 3:15 for two minutes in order to clean up their looping machines. In this time each operator cleans the machine thoroughly. Needless to say, this mill has a very low percentage of bad work from its loopers. A machine is good and dirty by that time. Also, the looper operators have been sitting down all day and this takes a strain off of them.

The Victorious Engineering Company of New York have invented a revolving brush for Wright Steady Dial loopers. This brush revolves as it sweeps, passing through a comb, thus insuring a clean brush at all times. This saves needles and lots of bad work. I think a machine equipped with one of these, and Paramount attachment makes an ideal looper. CONTRIBUTOR NO. 1874.

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Fuzzy Rayon on Plaited Work

EDITOR COTTON:

Some time ago I saw in your "Knitting Kinks" section a question from a man who wanted to know what makes a fuzzy looking fabric on a Banner machine, plaiting 120 denier viscose rayon on 70s/s mercerized yarn.

I cannot offer so very many suggestions on this subject in addition to those already presented in your columns. However, I have found that on this type of work, if the

latch ring is too low, the latch of the needle will have a tendency to "fuzz" up the rayon yarn. I have found it a good idea, in eliminating this fuzzy appearance, to run the latch ring as high as possible.

Also, this trouble could be caused from the sinkers being in so far that while they will not break the yarn entirely, at the same time they will break some of the filaments in the rayon, which will result in this objectionable appearance on the face of the stocking after it is knitted.

F. T. (TENN).

EDITOR COTTON:

In the June issue you published several good replies to a question which had previously appeared in "Knitting Kinks," from a man who was getting fuzzy work on a Banner machine, plaiting rayon over mercerized, using the horizontal striper, and forward and backward hook needles to get the vertical stripe.

These replies seemed to cover the ground, but it occurred to me that I might offer some additional pointers from my own experience on this class of work that would throw some more light on the subject.

Among the things I have found will cause fuzzy work is the fact of the latch ring being set incorrectly, either too high or too low.

Also, an important fact to remember is that with rayon fuzzy work is certain to result. You can knit pure silk just as tightly as you please, but with rayon it is an entirely different matter, and it is necessary to make a fabric that is not so tight when this fiber is used in its construction .

This fuzziness also can come from the bumper cams not coming in right, and I have found a number of men puzzled here. I will say that my rule for setting here is 2½ sinkers behind the needle.

Also it is important to see that the right-hand sinker cam is set in sufficiently far to throw the stitch over the center hook needle. While the forward hook needle is used for making the stripe it can be practically forgotten when looking for the causes of fuzzy work, as the other two are the main ones to contend with in this trouble.

T. W. (TENN.)

Cutting Out the Ankle on Seamless Hose.

EDITOR COTTON:

Answering the inquiry of "A. C. (N. C.)" relative to cutting out the ankle of seamless hosiery, would say that there are machines specifically designed for this operation, notably one by the Merrow Machine Company.

This machine has an automatic stitch control which automatically introduces more stitches in the back seam at the point where the stock is sheared out of the ankle, which is intended to stitch closely enough to bind all the stitches on the sheared edges of the fabric, and to prevent runs or drop stitches.

There are different methods of operating the machines. Some mills board the stocking and indicate the amount to be sheared out by a chalk mark, which is used as a shearing guide for the machine operator. Other mills handle the goods just as they come from the knitting machines, depending on the sewing machine operator to shear and shape without any guiding marks.

After short practice, an intelligent operator can cut the stocking in a very satisfactory way so far as shape is concerned without any guiding marks.

As a practice, I personally do not think well of the operation of shaping the ankle of seamless hosiery by shearing, no matter how it is done, as I do not believe that the sheared stitches can be satisfactorily controlled and at the same time make a slightly back seam.

CONTRIBUTOR No. 263.

Eliminating "Ears" in the Gore.

EDITOR COTTON:

I noticed in the May issue that "Contributor No. 53" asked for a remedy for what he calls "ears" right in the corners of the gore on ladies' mercerized hosiery where they are looped.

All seamless hosiery mills have this trouble. I do not know what size boards this man uses, but I have found here that the best way we have discovered to reduce this problem is to put more links in the toe and run the gore down longer. The longer the gore the better chance he will have for getting these "ears" out. I cannot tell him how much to put in, but suggest that he try two or three more links and go on up as his conditions will permit.

If he tries this I would be glad to know if it helps him, and also if he has found some other way to get around this difficulty.

S. H. (GA.)

EDITOR COTTON:

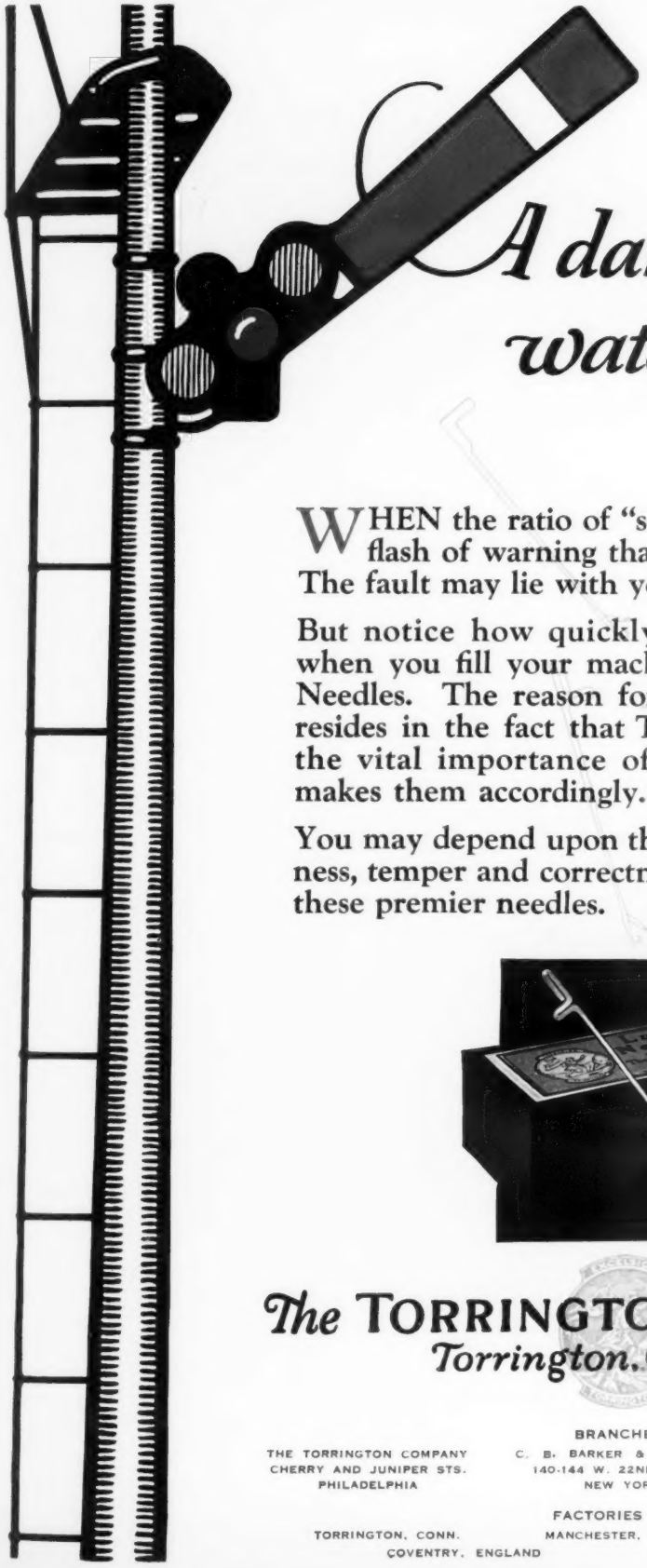
Some time ago I noticed a question signed "Contributor No. 53," asking if any readers had found a way of eliminating "ears' or puckers in the gore of ladies' mercerized hose after boarding.

In my opinion, this trouble will never be entirely eliminated, because when you work toward the end of getting rid of them altogether you run into other things just as bad or worse which makes it impracticable, so, like the poor, they will be with us always.

However, I have been able to reduce them materially, although my method of doing it is directly contrary to the ideas of a lot of men. I mean that numbers of men I have talked to about this say that the way to do it is to put more links in the toe. I have found just the opposite to be true—that by taking out, say, a couple of links and running eight links in the toe, I can get rid of a lot of this puckering. It shortens the gore.

I would be glad to have the readers try out this idea, and let me know what they think about it. Also, if anyone has a better way of reducing these "ears," we all would like to know about it. T. K. (TENN.)

National Erie Black RF is a new direct black offered by the National Aniline & Chemical Company, Inc., as a companion product to Erie Black BF. It is redder in shade than the latter dye, but possesses very similar properties. Like the other direct blacks of this class, it is highly recommended for the dyeing of cotton, rayon, pure and tin-weighted silks, and cotton and silk hosiery. It also will be found desirable as a speck dye, and in the dyeing of leather and paper. A noticeable improvement in fastness to washing is obtained by the usual aftertreatment with formaldehyde.



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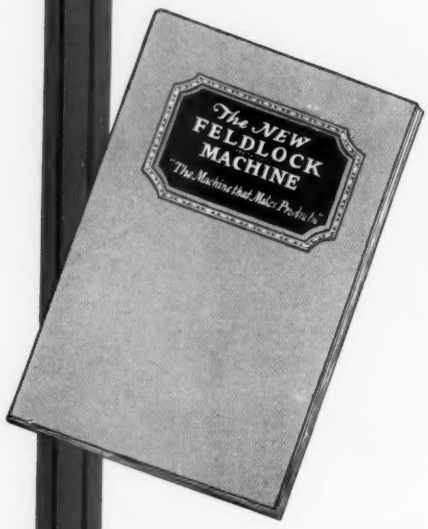

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Inspecting Underwear Fabric

Editor Cotton:

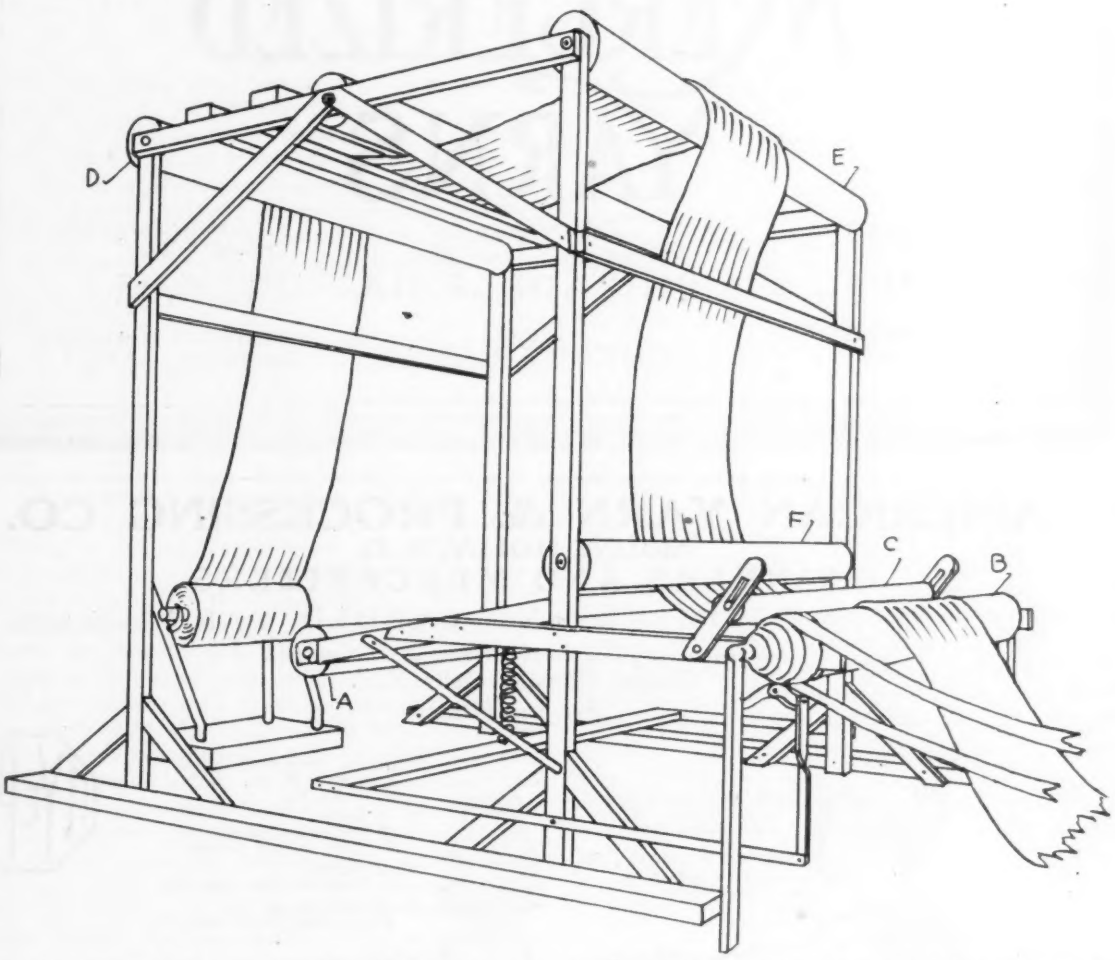
In the May issue, in "Knitting Kinks," you recall that you published a question from me asking other underwear mills to give any methods used by them for inspecting underwear fabric immediately following the process of knitting, this inspection to be done on the "perch" system of passing the tubing over a frame between the inspector and the light, in order to check up on needle lines and other defects that would get by any method of practical inspection on the knitting machine.

Following this, in the July number, you published several very helpful replies to the question from mills, which assisted us materially in making plans for installing such a system in our own knitting department. I especially appreciate your sending to me advance copies of these replies so promptly after they were received by you, as this fact enabled us to get started with our own plans sooner, and I am sure that other underwear men reading "Knitting Kinks" were interested thus to get an idea of practices in other mills.

In line with this thought, and since we have our own system now in successful operation, I am going to describe it for you, so that by having it published in "Knitting Kinks," other underwear mill men who are interested can see how we do it and possibly apply any of our ideas to any system they may have. Or, if any of your readers who do not have this system in their mills are contemplating the use of such a proposition can have our method to base their plans on in addition to those of which you have already published descriptions.

I will now describe our "perch" stand, over which the goods pass and which is shown in the accompanying illustration. This is a simply constructed affair, made largely of 2x4 wood pieces. The stand in our mill is approximately 7½ feet high. The length over all from front to back is 5 feet 5 inches. It is approximately 5½ feet wide.

On the side next to the window we have built an inclined stand in front of which the operator is situated. At the bottom end will be seen a roller, *A*, which is not in use during the regular inspection, but was included to provide for the operator for any reason desiring to pull the cloth down over the table for more diligent inspection or other purpose.



Extending out from the frame on the side nearer the window we built two arms which, in suitable plain bearings or housing, support the large roll which pulls the goods through the machine. This roll, indicated at *B*, is 7½ inches in diameter, and extends across the width of the machine. It is covered with emery such as is used for grinding rollers for card and doffer cylinder clothing in the cotton mill, to give it friction on the fabric.

Resting on this emery covered roll is an idler roll, *C*, which rests in a slotted inclined bearing. This is a plain

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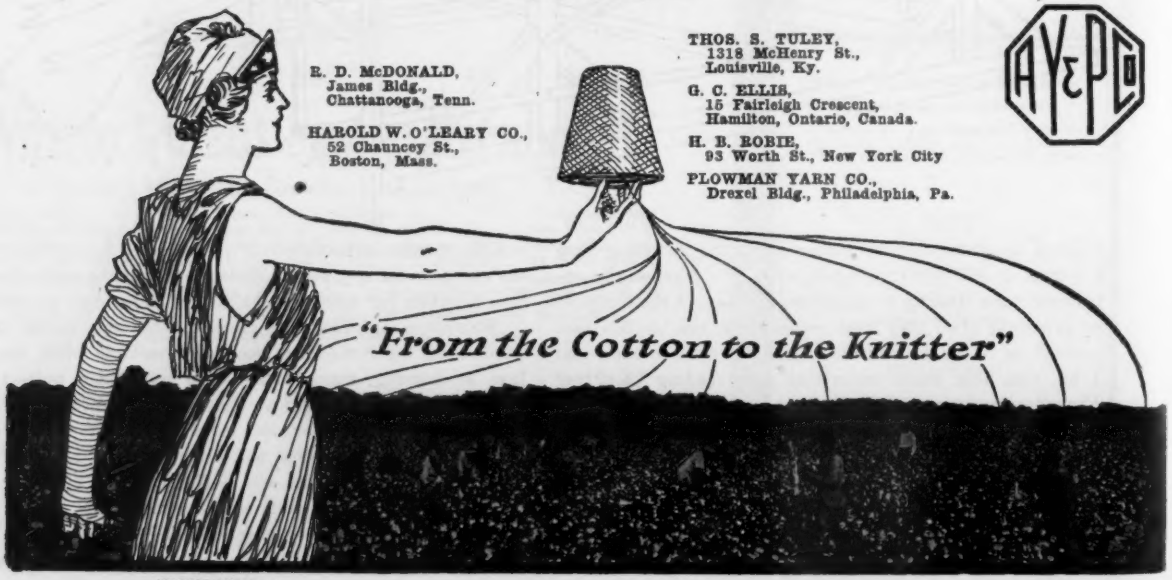

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wooden roller for the purpose of holding the fabric onto the driving roller, and the slotted bearing permits of its weight resting upon the fabric.

In order to secure the intermittent passage of the fabric through the inspecting frame, which is required as the operator wishes to vary the speed or on occasion stop for closer examination and marking a defect, we use the pedal as shown, which is connected to the end of the driving roller through a series of arms.

A downward movement of the pedal, through this arrangement, causes the friction clutch to engage the pulley which is connected to a line shaft by a small belt.

The cloth is shown passing through the machine in the illustration, and I will describe our method of threading it up.

The rolls from the knitting machines are placed in front of the "perch" on stands provided for the purpose. The width of our stand permits us to place three rolls end to end. As we can place two lines of rolls in the stand, one above the other, this takes care of six knitted rolls at one "creeling," if desired.

The fabric passes over the guide roller *D*, over a 2x4 slat and under the next slat, under the middle roller and over the roller *E*, then straight down under the roller *F*, and and then under *C*, and over the driving roll *B*, from which it falls into trucks or boxes and is then taken to the finishing department.

The frame is situated so that the fabric, in passing down from the roll *E* to the roll *F*, is between the operator and a window, so he is enabled to catch any defects on both sides of the fabric. With the friction arrangement, he can vary the speed, or stop the passage of the fabric at will.

While some of those answering my question showed blanks or forms they use for the inspectors to record the defects, we have them put on the back of the regular ticket, and have not made any special form for this, although of course a special form is more systematic.

After using this machine for quite a while, we have found its advantages to be practically those which I mentioned in my original letter containing the question, published in the May issue. That is, where an inspection at the folder alone, after the goods are out of the knitting room, if grey knitted fabric is carried in stock before going to the dyehouse, defects are not caught sometimes until quite a time after the knitting is done, and furthermore, the folder inspection must be hurried.

By carrying out this perch inspection immediately following knitting, we can catch defects promptly and fix the responsibility, and also we frequently can find a machine defect in time to prevent it occurring on goods afterward made on the machine by correcting the difficulty at once. If the cutter looks at the defects marked on the back of the ticket, he can get a general idea of the kind of roll he has to work, as I brought out in my other letter.

Each mill naturally will have to determine the details to suit their own practices, customs, grading and conditions, etc., but I believe the foregoing, with the sketch, may help anyone who is considering something of this kind.

Should any reader have a different system I would be glad to have them tell "Knitting Kinks" about it so that I might get any further ideas along this line which are being used in practice.

CONTRIBUTOR NO. 3428.

Some Questions on the Model K Machine.

EDITOR COTTON:

I read your "Knitting Kinks" department, and I think it is very fine to have a means of this kind for securing and exchanging knitting information with other mill men. In order to contribute something to provoke continued discussion on the Model K machine I submit the following questions. I read "Rymi's" series on operating this machine, and think that he and you have made a distinct contribution to the knitting industry in presenting these opinions of an experienced man in such a compact and understandable form. I am sure that the younger men in the industry especially will appreciate it and recognize its value. I have been in the game a long time, and I know if I could have had something like "Rymi's" articles, or "Knitting Kinks" when I was literally coming up "through the mill," I would have been saved many hours of work and worry.

To other old-timers the questions I am asking in this letter may seem to be very common. They, like myself, have undoubtedly devised ways of getting around them. Nevertheless, I would like to know how other readers solve them, and perhaps out of the discussion there will be new thoughts developed for all of us, so I hope your readers will voluntarily tell us how they do it. I would like to hear from a number, from "Rymi" on through the list. Here are the questions:

1. What is the best remedy for preventing a K machine from making drop stitches on the long-butt needles, coming off of the heel and toe?

2. What makes a K machine sometimes give trouble making drop stitches in the gore, first on one side and then the other? Maybe some machines might give trouble with drop stitches on both sides? What is the best way to eliminate these troubles?

3. Does anyone have trouble getting the downpick or dropper on a Model K to pull the needles evenly on both sides of the cylinder? I mean that sometimes it will pull the needles freely on one side only, and also it will sometimes pull the needles lower on one side than on the other? What is the best thing to do to make this work properly?

I hope your readers will "come across" now. It doesn't make any difference if some of the questions have been answered before. That's one thing about this business—it is very seldom that there is just one and only one way to do a thing, and the more viewpoints we get, the more interesting it is for all of us. K. T. (GA.)

Carroll G. C. Daly, formerly sales manager of the Industrial Fibre Co., Inc., has organized the Daly Rayon Service, and offices have been opened on the thirteenth floor of 151 Fifth Avenue, New York City. This organization was formed in response to the appreciation of the need for a service of this character, it is stated. Prior to his position as sales manager, Mr. Daly was connected with the service work of the Industrial company. The new service is making a special study of new uses for rayon and its by-products, and also will offer advice as to the proper preparation and handling of rayon. In addition, the organization will supply all grades and qualities of domestic and foreign rayons and in any form, it is stated.

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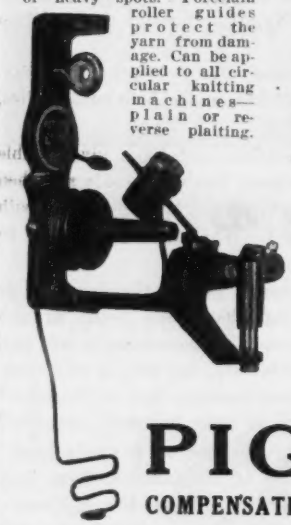

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EDITOR COTTON:

"Knitting Kinks" is a mighty interesting section for the mill man but so far I have seen little in it concerning market tendencies. What is the matter? Knitting mill men have opinions on probable conditions and styles, and it is just possible that occasional discussions and experiences will bring out something of real value. In order to open up the subject I am going to submit a few remarks along the line I mean.

"Are men going to wear colored underwear" is a question asked quite frequently at present in the trade and a few of the manufacturers are inclined to chance some of the advanced ideas in this line if they can be convinced that the men will wear them. The argument is brought forth that colored pajamas were quickly adopted along with other colored garments used by men, and why not colored underwear? The underwear in question would be made in knitted and athletic union suits, and in one or two cases it is said not only to be a possibility, but is actually on the market.

The question arises as to what colors possess the most promising possibilities. Will they turn their attention to flaming red such as was formerly used in "woolen flannels?" Or are they likely to favor their favorite shade of blue, or it might be the gray such as we are familiar with in woolen union suits and separate garments at the present time. There is the natural balbriggan shade which might be reproduced in a tone between a yellow and pink, and might appeal to some men. Let me assure you that if the selection of color is left to the woman she will pick out one of her favorite shades of pink, which she prefers for her own undergarments, and men that travel along the lines of least resistance and have their wives buy their underwear may be tortured by being forced to wear pink underclothes. Will they or will they not meet this condition before it actually gets the control of the market, and band themselves together to select their own colors and raise a ban on bright tones?

Of course, if pink is turned down there are many other pastel tones that might be preferred such as orchid, Nile green, pale blue, yellow, etc., but white promises to be prohibited in the near future. These goods are to be brought out in time for the late winter and spring buying, it is said, so that those who might be going to winter resorts can be equipped with the newest in "undies."

However much the subject might be discussed, opinions are at variance to the ideas of the conservatives who believe only in pure white, but advertisers may appeal to the love of color of both sexes in the selling of the merchandise. It has been suggested that the manufacturers who have the nerve to bring out these lines get them ready for the holidays so that women may be able to make a "useful gift" to their men folks and it may be left to the imagination as to what the result will be. One buyer said it might be worse than the box of cigars they often send in for Christmas, or the neckties so frequently selected for them to wear, and he has sort of a friendly feeling for the consumers in his city and has declared that he will stick to gray, natural color or a light tan, crayon periwinkle blue, and stay away from the pink tones, although he liked the pinkish yellow, so popular at the moment, and didn't believe that men would object to that because it was almost the natural balbriggan shade.

The underwear under discussion is to be made in knitted garments, generally in union suits, and it has been said that some athletic silk union suits for men in colors are actually ready for distribution if they are not already on the market. How do most manufacturers react to this color idea that has already taken a strong hold in some other portions of knitted wear? S. E. (N. J.)

Ribber Needle Latches Breaking at the Tips.

EDITOR COTTON:

We recently had some difficulty on our Brinton ribbers with the needle latches breaking the tips off about half way of the spoon.

I noticed in a recent issue a question from one of your readers who stated that he was having this same trouble, and I thought I would write you and tell you what we found to be the trouble, and how we overcame it.

Of course this could be caused by one or more of several things, and it may be that our trouble was not the same as this fellow's. Then again, it might be exactly the same thing. At any rate, he and the others who read this question and are interested in it, might like to hear of our experience as one further solution to the problem.

We found, after experimenting, that our trouble was caused by the thread guide being set too close so that when the latch came over it, it would hit the back of the guide and snap the point of the latch off.

Our present rule in adjusting the thread guide is to set it so that when the latch comes over, it just misses the thread guide by the thickness of a piece of paper.

We have very little breakage from this source at the present time. I am sure the other readers, as well as myself, would be interested to know how this man comes out on his problem after trying the suggestions offered in this letter and the other replies you received to his question, which have already been published. Will he tell us just what he found to be his particular trouble, and how he solved it? H. S. (TENN.)

Are Men or Women Knitters Better?

EDITOR COTTON:

I note that the discussion as to whether men or women make the best knitters has kind of died down in "Knitting Kinks" lately. I am sure this is not because of lack of interest, for I know that every knitting room foreman and superintendent has his own ideas on this question, and is running his machines according to the plan he thinks is best, if his conditions will permit, and the result is we find both sexes operating machines in mills throughout the country.

I want to apologize for being a little late for coming along with my ideas after several of the others have seemed to have had thier say. However, bringing up the subject again may renew the interest in it and cause some of the fellows who have been silent thus far to join in the chorus. Of course we probably shall never come to any definite standard about it, because when everything has been said there will still be a lot of differences of opinion about it, but at the same time it is a subject that is interesting, and we like to see the other man's ideas, particularly if he has

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the experience and facts to back up his arguments. Then again I have noticed several times that when the readers get to talking about a subject of this kind, it leads them naturally into another line of thought which is also interesting, and so it goes.

Now, I have no intention of appearing humorous or of trying to mix up the sexes as they were established for us. Goodness knows, though, with the flappers saving on clothes, making business rotten for piece goods mills and better for the hosiery mills, and bobbing their hair so short, and smoking and all that, and with the males of the younger set wearing corset-fitting coats and trousers that will soon be skirts if they make the bottoms much bigger, there already seems to be a move in that direction.

But that is getting away from the point. What I started to say was that in the knitting room I prefer women knitters on men's half-hose, and men knitters on ladies' hose, or string work. (Things are getting kind of mixed up, aren't they?) My main reasons work both ways. In in the first place, on transfer work you have what might be called the "stitch work," that is, the topping, and a woman is just naturally more adapted than a man to this kind of work. Furthermore, on this type of knitting the operator does not handle so many machines, and there is not so much "floor-walking" to do.

On the other hand ladies' hose is generally string work requiring no delicate operation like topping, and the operator runs a much larger number of machines, and a man is better suited for this.

I imagine somebody is already saying—why not furnish the men knitters with girl toppers, and thus have an ideal combination of your two preferences?

Because I don't think it's fair, that's why. As every practical man knows, in transfer knitting, topping is considered half and knitting half. All right, if that be true and a man knitter has girls topping for him, he can run so many more machines thereby and get an increased production, while a girl can top for probably only ten machines. Is this fair, when the two operations always have been considered equal? I say no, and my choice would be for girl knitters, doing their own topping on all transfer work.

However, it happens that I have one stand of machines on transfer work which are run by a man knitter, who has a girl topper and this girl has a helper for unraveling and assisting in topping. With this assistance this man's production, on a stand of 12 machines is 48 dozen, while right next to him, on the same class of work and on the same kind of machines, I have a girl knitter, *who does her own topping, whose* production on five machines is 25 dozen. A higher average per machine! The man is not an especially poor knitter and the girl is not an especially good one. Just average—both of them. There you are!

I guess I'd better sign off now, but before doing so, let me say something in reply to one of your contributors—I forget just which one. Anyhow, he said he preferred men knitters because this trained fixers for him—"and whoever saw a girl fixer."

Well, I don't agree with him. The best fixer I have today—in a mill of over 500 knitting machines—is a young chap who never ran a knitting machine, as a knitter, in his life. I saw he had a mechanical turn of mind and I brought him in here and trained him up. And as it happens, the one I consider least efficient, is one of these "graduate knitters."

There! That's enough for one sitting, I guess; too much, maybe. But if any of the boys want to come back at me, let them fire away, I'll stay right with them, right to the end. Before we get through, maybe somebody will get up a machine that requires neither a man or woman. In the meantime, I stand firm in my position but open to conviction by any of your readers, young or old.

Contributor No. 315.

Desires Opinion on Manufacturing Method

Editor Cotton:

I have a subject which it occurred to me might be the basis of an interesting discussion in "Knitting Kinks."

Making fancy top hose, we are considering the possibility of taking a regular Scott & Williams footer—and it could be done too, I believe, on the new Standard H model—and taking off the cam box cam which keeps the machine from leveling the needles, causing it to run right straight through, and taking off the high cam that raises the thread carrier which keeps the thread in the needles all of the time, making "string" work in this manner, and then using another footer or a ribber for making the top, later sewing these together.

This, it can be seen, would be a distinct advantage, with the footer making "string" work, one machine could turn out an enormous production compared with the machines on tops.

The one practicable objection I see is in dyeing the "string" work, which of course would have loose ends where the cutting was made to separate the stockings. It would be hard to dye these, and of course with fancy tops, the dyeing would have to be done before the tops are sewed on.

If any readers have any methods or ideas along this line, I would like for them to let us have them through "Knitting Kinks."

H. L. (Tenn.)

Drop Stitches on the Looper Line.

Editor Cotton:

I am very glad to answer the question you recently published as to what will cause drop stitches on the looper line on the first round leaving the toe on a Banner machine making mercerized half-hose.

I have found, on the model machine of which a majority probably are in use, that this usually comes from the bottom pick coming downward and catching the needles and then going back up and hitting the butt of the needle that is already up, causing a drop stitch.

For the information of those who are not familiar with it, I will say that the manufacturers of the Banner machine now have a new pick and new attachment for the pick that is applicable to any of their machines now in use, and which will absolutely do away with the trouble from this cause.

If the loose course cam is not properly set it might cause this trouble, but I am sure that anyone having this difficulty will find this new type pick and attachment to be the solution of his problem.

And of course it is well known that loose needles will cause it.

N. C. (Tenn.)

The Yarn Market

Philadelphia, September 18th, 1926.

In addition to containing two Government cotton crop reports and a three-day holiday season for Labor Day, these features of course having their respective bearings upon the activity and price movements of the market, the past month, so far as the Philadelphia cotton yarn market was concerned, brought other phases which changed the situation fundamentally in the market and permits the nature of this report to be different from the tone which has prevailed for some time as a result of the intention here to reflect the conditions existing in the market.

Especially was the effect noticeable in the carded numbers of the list, there being likewise nevertheless a change in combed goods, but with the coarser counts of the former classification leading.

The change referred to was a very definite improvement in interest and activity in the market, and a boosting of price ideas up to where those of the consumers more nearly approximated the ones for which the spinners held firmly. Coming in the latter part of August, the improved situation resulted in that month's averaging up as the best so far as the market was concerned for quite a period.

This improvement seemed basic, although at the present time, as a relapse or reaction to the spurred-up condition, things are quieted down somewhat. This, however, is considered to be more temporary and immediate than permanent, since the basic change has been made and the movement forward. These are general statements, since those dealing in yarns have found the market as mercurial as a barometer, and in fickleness and uncertainty of action second only to the cotton market itself and woman. So generalities must suffice.

Possibilities of adverse developments to the contrary notwithstanding, however, the positive declaration of an improved situation from all standpoints at the present time can be made.

The week preceding the four-week period ending with today found the market in an attitude of uncertainty and anticipation regarding the impending Government cotton crop report on August 23rd. The character of the report issued on that date, with which the month-period considered here began, exerted an influence of good moment upon the market, there was an advance right away, mounting up from an initial one-cent increase following the report to higher raises when cotton itself reacted to the report. It appeared that the resultant activity would be of a substantial and permanent character.

The first manifestation of interest in months from some buyers developed. As an illustration of what happened, 20s/2 carded warps for weaving, in spinners' eyes, became worth a firm 35 and 36 cents a pound, while much business moved at slightly under that. The volume increased considerably, as has been indicated in bringing up August's total volume, and the amount of yarns in an order averaged up higher than previously. Generally speaking, the improvement raised yarn rates over the list on a broad average of three cents a pound.

Of course, there was a natural irregularity in price when different counts and classifications in the list were compared, this always prevailing and being accentuated at the time by transactions in stock yarns, which underwent a severe shrinkage with covering for short selling.

The developments of the next week served to strengthen the market and emphasize the improvement, and the market went into September and got over the holiday on a definitely better basis. There was the usual post-holiday dullness, but at the same time there was another report to anticipate on the 8th, and in preparation for a bullish report, business breezed along at a speeded-up gale at even higher prices in lots of cases than the previous week's rates. Here carpet and upholstery yarns belatedly joined the improved position of its neighbors on the list.

After this report, the takers of the pulse of sentiment found factors more interested in production and shipment of yarns than in crop forecasts.

The situation took a definite change in trend during this week, but at the same time the spinners continued firm in their position. Buyers seemed to hope that the miracle of perfect weather would bring a larger crop, and their attitude also seemed to be one of reflection and the increase in rates had been a trifle steep. At the same time, some buyers expressed themslves satisfied with the situation, since an improved cotton and yarn position would reawaken buying interest in their own products.

Philadelphia prices on September 17th follow:

Single Skeins.

4s to 8s	30	10s	30½
12s	31	14s	31½
16s	32	20s	33
24s	36	26s	37
30s	38		

Single Warps.

8s	30	10s	31
12s	31½	14s	32
16s	33	20s	34½
26s	37½	30s	40
40s	49		

Carpet and Upholstery Yarn in Skeins.

6s 3-4 hard white warp twist	29½
8s and 9s 3-4 tinged tube	25½
8s 3/3 hard twist waste	24

Two-Ply Skeins.

8s	30	10s	30½
12s	31	14s	32
16s	33	20s	34
24s	36½	26s	37½
30s	39 @39½	40s	48

Two-Ply Warps.

8s	30½	10s	31½
12s	32	14s	33
16s	33½	20s	34½
24s	37	26s	38
30s	40	40s	49

Frame Spun Carded Yarn on Cones.

8s	30	10s	30½
12s	31	14s	31½
16s	32	18s	32½
20s	33	22s	34
24s	35	26s	36
30s	37½ @38½	40s	48
30s double carded	38 @39	30s tying in	36

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	40	20s	44
24s	47	30s	50
40s	55	50s	60
60s	70	70s	80
80s	92		

Single Combed Peeler Yarn on Cones.

18s	42	24s	44
30s	50	36s	51
38s	52	40s	54

Mule Spun Carded Yarn on Cones.

10s	35	12s	36
14s	37	16s	38
18s	39	20s	40
24s	41	26s	42
30s	43	40s	52

Mule Spun Combed Peeler Yarn on Cones.

10s	44	12s	45
14s	46	16s	47
18s	48	20s	49
22s	50	26s	53
28s	54	30s	55
36s	57	38s	60
40s	65		

UNIVERSAL TEXTILE WINDING MACHINES

UNIVERSAL WINDING COMPANY

Offices in Providence
New York Chicago
BOSTON
Philadelphia Atlanta
Charlotte Utica

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This Warping Unit in Operation at the Greenville Show

Quantity Production Cost Reduction

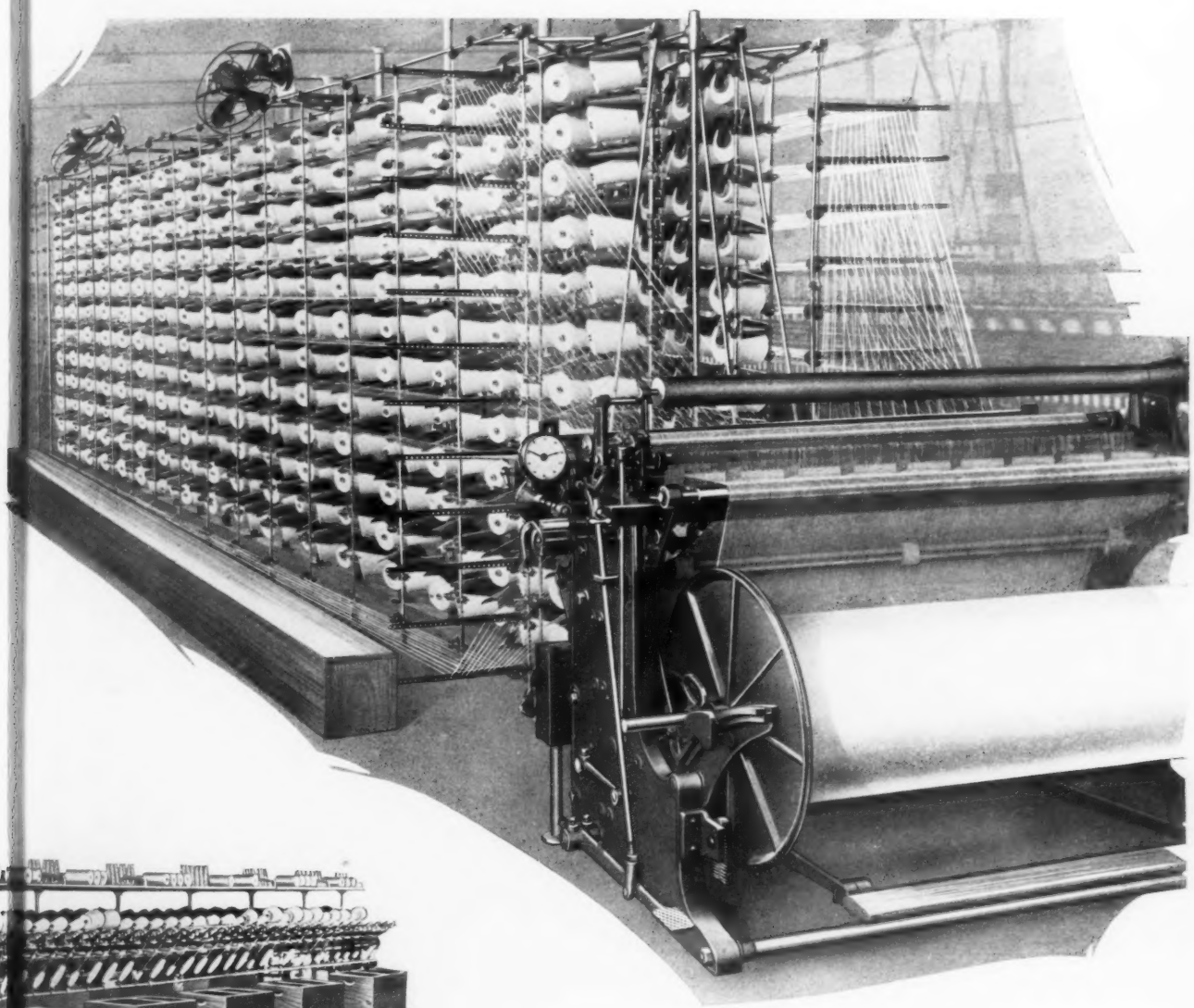
Cones have three times the yarn capacity of spools. Every yarn is drawn off under equal tension at from four to five times the speed of delivery from spools

THE UNIVERSAL WINDING COMPANY offers this warping system to the textile industry as being more economical and as introducing improved conditions in the weaving mill with substantial economies in all operations between the spinning bobbin and the woven fabric, such as saving in floor space, power, waste, wear and tear of machinery, cost of winding, cost of warping, and with substantial improvement in the quality of the woven fabric.

No. 60GF CONER

Especially constructed for winding yarn on cones at from 500 to 600 yards per minute, thereby effecting substantial economies in winding, in power, in waste saving and economy of operation.

November 1-6, 1926, at Our Booths No. 130-131, 162-163



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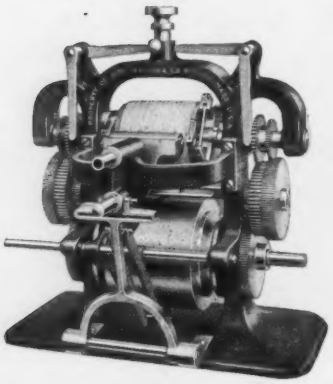

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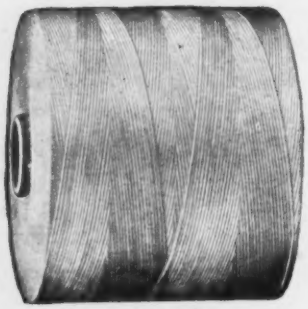

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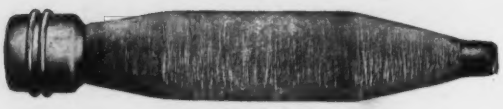

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The UNIVERSAL WINDING COMPANY

Is a New England Enterprise

It was organized, fostered and expanded to cater to a market which now embraces thirty-five countries. Machines are supplied to cover practically all the needs of the cotton, worsted, woolen, flax, jute, silk and rayon industries.

The Knit Goods Market

The late summer decline in temperatures came opportunely for knit goods primary market interests. The drop brought buyers to a groggy market for wool hosiery, heavy weight underwear and sweaters, and incidentally there appeared a steadying influence on silk hosiery, seamless lines receiving no less a lift than the full fashioned. In the background was the preparation for a brisk holiday trade in hosiery and silk and rayon underwear for women. Fall opened, therefore, on a brighter situation than had prevailed during months when mills were curtailing production. There were incidents, however, which served to give distributors of hosiery a pretext for approaching the market on tiptoe lest they leave the impression they really were in need of goods. Developments showed they were.

Hosiery.

Outstanding as a momentary disturber was a price reduction by the Quaker Hosiery Co., Philadelphia, offering women's full fashioned all-over silk at $12 a dozen to retailers, which is about the mill price generally to jobbers. The first announcement was that this price would prevail for deliveries to October 15. The offer had not been withdrawn after several weeks, from which it was deduced in the trade that the Quaker company either had a cumbersome accumulation or was not disposing of the stock as rapidly as it was expected the price would move the goods. The explanation by an official of the company was that there was simply a surplus of a given number and that it had been decided to reduce the holding to a stage where capacity production of the several numbers might proceed.

Some persons in the trade interpreted the offer of the Quaker company as meaning the manufacturers may have felt uncertain as to demand for chiffons continuing into late fall and winter, and thought it better to unload and be in position to go along with the market in whatever style demand might develop. The mischief of it all was intensified by Brown Burell & Co. reducing the price of their Gordon V line of chiffons to $19 a dozen from $22.50, the revision by approximately 15 per cent being viewed as sensational.

The Gordon V line is a feature stocking, which may have had its inspiration in the success of the pointex heel. Price reductions on featured hose cannot be viewed as bearing any relation to the market at large, for often the features do not win favor. It is recalled that a few years ago a specially constructed silk stocking priced $27 by a manufacturer made no hit and could not be moved profitably to mill or merchant. A large remnant was closed out at something less than $12 a dozen. Another featured stocking, in the moderate price range, almost ruined the manufacturers, although for a time sales were running well ahead of production. And the trade has recollections of the tape seam stocking, which went flat after a phenomenal run. Incidents of this character tell why most of the seasoned mill heads stick to staples or stay out of deep water if they be attracted to the novelty stream.

There was a report of a manufacturer so eager to introduce a cheap line of silk half hose in a city where it was not on sale that he was willing to promise retailers he would relieve them of goods remaining unsold after 60 days. The facts in this case have not been ascertained and the report may have reached the trade in garbled form. At any rate, nothing more has been heard of the experiment.

It is common knowledge that three full fashioned hosiery mills in Philadelphia have been offered privately for sale, and this gives bear interests something to talk about. All of the mills are equipped with 39 gauge machinery, while most of the new installations are of 42 gauge, and much of the equipment of one of the mills offered for sale is of very ancient vintage. Those who take the time and trouble to analyze conditions at the source of trade reports of a disturbing nature usually find the facts change the color of the reports.

A trustworthy compilation of mill reports covering more than 60 per cent of the country's hosiery production indicates that the July output of women's full fashioned silk declined by about 10 per cent from June, seamless falling off in like proportion. This was due to no Saturday work in mills where the hosiery knitters' union dictates working hours and to the general policy of granting operatives a full week's vacation. Even with this curtailment there was at no time a scarcity of hosiery nor is a shortage imminent, judging from sensationally low prices noted in large stores for their special sales, in which rayon hosiery is seldom included. Production of women's rayon boot hose suffered an indicated drop of 32 per cent in July from June and a decline of 57 per cent for the seven months of 1926 comparing with the corresponding period of 1925.

Rayon hosiery, it would appear, has had to yield to low price seamless silk, to say nothing of the steady drift to full fashioned. A nine-thread 24-inch silk boot spring needle stocking was put on the market quite recently as a dollar a pair counter proposition, and there is high grade seamless all-over rayon plaited on silk for a dollar, and an all-silk seeamless service weight with pointed heel which goes over the counter at $1.50 and is a strong seller, according to mill and jobber report.

The unusual spectacle was presented in September of several seamless silk hosiery mills in Philadelphia operating overtime and one, plaiting silk on rayon, similarly engaged, all turning off hose to retail at a dollar a pair, as popular as the one time nickel cigar.

There always will be a price place for a quality seamless that fit, it is admitted by conservative full fashioned interests, and it appears to some that the place is broadening, for circular machines apparently are getting considerably more business than was reported a few months ago, notwithstanding full fashioned output this year has increased more than 30 per cent over 1925, according to official reports. But any attempt at cheapening product for price would probably give the seamless industry a serious setback. With a few mills knitting full fashioned of silk in twist with rayon, seamless hose may have still more to contend with.

The more unsatisfactory condition in hosiery seems to be in juvenile lines, of which jobbers are taking very conservatively for the next season. The seven-eighth length sports stocking for misses is in some distrust in the wholesale trade by reason of a drift to full length silk and silk-and-rayon for young misses, the element which for several years wore the fancy top sports stocking. Then, too, golf hose is becoming more popular for boys. Business in young misses' flat hose, sizes 7½ to 9, is steadily on the

increase, and, while confined largely to the seamless, is gaining with some few full fashioned manufacturers. One reports a 50 per cent increase in shipments this year over 1925. The young misses' full fashioned is a $2 stocking in the more exclusive retail stores.

Misses' fine gauge full length ribs have been in better call for the coming winter than was the case for the previous season, and there is a better outlet for mercerized ribs, but prices are low enough to leave the inference there is no lack of goods in these classes. The conclusion to be reached from the broadening use of the onetime staple ribs for juveniles is, jobbers say, that the short hose may be going the way of the hitherto popular sports ribs and R I hose generally. At any rate, they find a pretext for operating in any class of juvenile hose with extreme caution.

A few of the manufacturers of infants socks in and around Philadelphia last month restored full time work schedules, after having operated for some weeks on a 50 per cent capacity basis. Business in the socks is being placed more freely, but has not reached the stage of the corresponding period of recent years. This, however, can be attributed to the general jobber policy of buying closer to needs and making forward commitments only when forced to do so to be certain of desired deliveries. And this applies to pretty nearly all textile products.

Manufacturers complain that jobbers forced lower prices for infants socks, and that some mills have taken the difference out of the goods. Buyers stood out for a reduction of 50 cents a dozen on a strong line of infants goods in which the reduction in rayon saved manufacturers but 12½ to 15 cents. As some mills yielded to jobber pressure for unwarranted revisions, there developed a highly unsatisfactory price situation, and with values uncertain, buyers were in no hurry to make commitments. While the worst is in the past, at least one important mill will be operated only on orders. "We shall not make a case of infants' socks for stock," said an executive, who attaches little importance to orders not accompanied by details. Jobbers say infants' socks last year were overproduced, and they were, if what dealers say of their carryover be true. This is not stating the case accurately. It would be nearer the truth to say merchants overbought, and as retailers adhere to prices which spell wartime profits it seems not improbable that the fact there were carryover stocks can be attributed in part to consumer resistance to prices.

Dependable information as to the outlook for any very extended use of wool hosiery in the coming winter indicates no violent trend in that direction. In juvenile lines there is said to have been no great amount of business placed, although in the last few weeks there developed some new interest in good grades of worsted and for wool-and-rayon for the trade that wants price. Some primary market factors say that with young misses taking to long silk hose and an indicated trend to full length combed and mercerized ribs, a decline in the use of wool is to be looked for. Several weeks ago there developed a better demand for low end carded ribs, and in the face of a softening in raw cotton, several mills advanced their prices of the hose by 2½ to 5 cents a dozen.

The line of one of the leading manufacturers of women's wool hose seems to have been taken comparatively freely by an element in the jobbing trade. To the middle of September this manufacturer had shipped out over 90,000 dozen pairs, which was an increase of more than 60 per cent over

Hosiery Mills—

Why not increase your profits?

Many mills have learned that the road to increased dividends is through the introduction to their trade of novelty combinations. Our deliveries are growing weekly on combinations of Silk, Rayon and Celanese twisted with other fibres. This, as well as pure silk throwing, taken on a commission basis.

May we have the opportunity of demonstrating the saving made possible through this method of buying quality throwing?

DUPLAN
SILK CORPORATION
COMMISSION DEPATMENT

Southern Office
Johnston Bldg., Charlotte, N. C.

New York Office
135 Madison Avenue

Mills at
Hazleton — Dorranceton — Nanticoke, Pa.

the shipments for the corresponding period on 1925. The bulk of the business was in numbers to go over the counter at a dollar a pair. It is doubted if more than a very few mills has made so satisfactory a showing. Most of the fashionable shops stressing women's wool hose lay emphasis on English makes, in which there appears less price competition in our domestic markets. Besides, for the shopper who need not be governed by price in making her stocking selections, there is a lure in the branding that indicates an importation.

So popular are chiffons and so attractive the prices of these gauzy bits of legwear that the outlook for women's wool hose is regarded by some important factors as not "so promising". If it be true, as represented in the trade, that merchants have stocked up with wool underhose, it would appear the trade reposes much confidence in the sheer for winter wear.

Perhaps men's half hose represent the better guess in the wool division. In flashy patterns and plain and heather effect as well, wool socks took a foremost place in retailer demand in recent weeks, and it was stated by several of the more lively primary market operators that deliveries were in arrears. The volume business in wool half hose is in lines to retail at 50 cents to a dollar a pair, and rayon and wool in combination, not omitting a safe proportion of cotton, seem assured of a prolonged good market.

As fancy half hose for fall and winter has taken a firm hold on style as interpreted by dealers, there is an increasing confidence in patterns for the spring and summer of 1927. More old men are wearing them, is the observation of a leading hosiery jobber, who deduces that, with youth still addicted to wild stripes and figures, fancies are in no danger of losing their hold. Retailers like the novelties for the reason they afford opportunity for bootlegger profits.

A Philadelphia dealer who had bought of a branded line of striped socks at a special price of $2.75 a dozen for a drive sale put them on the counter at 80 cents a pair, coming out a few days later with a markdown to 65 cents. They were a 50 cent sock, and in this instance made no great appeal at 65. This coming to the attention of the manufacturer, he tried to shame the dealer for undertaking to exact too much.

Half dollar socks in three to four colors, knitted of rayon plaited on mercerized, are a healthy proposition for retailers, some of whom mark them 55 cents, two pairs for a dollar. This, if adhered to, usually results in a sale of two pairs instead of one, but it is detracting from the business in the batter grades of fancies. A number of mills in Philadelphia and Reading are sold well ahead of novelties suitable for year around wear. But the average dealer is doing no speculating in quantities, and will have no disturbing stocks if there be a revival of interest in plain colors, something that is said by well informed factors to be more than a possibility.

Plain color seamless silk socks to sell at half dollar to 75 cents appear to be gaining favor, while the full fashioned seems to be moving very slowly. One of the best lines of silk half hose on the market is priced $4.50 to jobbers. The mill making it is selling capacity production and a few months ago increased output by the installation of additional split foot equipment. One indication of a broadened use of plain color silk next year is given inquiries from jobbers as to the probable color range. But retailers will not be likely to push it so long as larger profits are to be gotten out of novelties.

Underwear.

A foreshadowing of important downward revisions in prices of cotton underwear at the opening of men's ribs a few months hence for the 1927-8 winter is supplied in the markdown announced by a direct-to-retailer manufacturer who last month put his light weight lines on sale. With spot cotton last month ruling around three to four cents lower than when prices in the fall of 1925 were assumed to have been named by mills, jobbers appear to have taken a stand for even a sharper reduction from current lists than is warranted by the drop in cotton. They want a late opening of heavy weight cotton ribs for the next season, and a number of manufacturers are in accord with jobber sentiment on that subject. Some have openly advocated it. At this range, it appears to an onlooker that if prices be named in November, as was the case in 1925, they will have to be lower than is anticipated to coax jobbers to market at that time.

Although insistent that the opening be deferred until January, jobbers would like to have in December a slant on next year's prices, to guide them in writing values down in their inventories. They can be accommodated in this respect, say manufacturers, even though no business were to be written before January. The opening for next year just now involves a problem more serious than that as to the outlook for the remainder of the current year.

Barring the unexpected, underwear will be priced lower. The disposition of holders is, necessarily, to reduce their stocks to a minimum before inventories are written, and jobbers, in the main, seem to be in no danger of having a carryover. They must have goods for late December, for taking care of a retail trade that buys one-sixth dozen lots for filling in as assortments are broken. It seems a certainty that with severe weather in December and January there would be a scarcity of underwear, for jobbers would have little and if manufacturers adhere to their policy of producing nothing for stock, they would be in a like position. There is good demand for spot goods, from which it is inferred the average jobber is preparing to close his season by the end of December with practically nothing on inventory. A result of this situation is that prices are ruling firmer, in contrast with a disturbing wavering at times during the summer when mills were in need of business to keep plants going.

According to leading jobbers, retailers are hardly prepared for a sudden cold snap, except as to certain distinctive lines in which the situation is more nearly in control of the mills. Dealers feel that they can buy the unidentified whenever they need it, but that it may be not so easy to pick up either of a number of well known brands in a rush. And they are encouraged in their hand-to-mouth policy by open announcements of some distributors that "jobbers now must be prepared to supply retailers on demand if they would hold their trade." There is a big chunk of logic in this, but most jobbers are leaving it to mills to carry the stocks. Even now repeat orders for fair quantities of branded goods are reaching mills, in many instances representing 50 per cent of the size of initial orders. And there will be more repeats of this character. Real activity in heavy weight underwear was reserved for the tail end of the season.

What the trade invariably refers to as the southern

group of mills, which embraces large establishments in North Carolina and Tennessee, appear to be in a better position as to this year's business than any group of a like number in the North. At any rate, they appear to have maintained a more steady stage of plant operation than was the case in sections of the Mohawk Valley. This may be attributed in part to the booking of considerable business for early deliveries, at advantageous prices.

Several of the southern mills are known to have been sharing largely in the August-September duplicate business, in which, also, there was pronounced improvement for leading mills in the North. But it can be stated as a fact that, if winter set in early, a great deal of underwear will be wanted. Compared with a few weeks ago, the market might be described as strong and comparatively active, more particularly as relates to distinctive and certain substandard lines. Duplicate business will make the backlog for the heavy weight industry.

Anticipation of lower prices has loomed large as a factor in the delayed business in men's light weight underwear for 1927. Persons in the wholesale trade, who may be assumed to have a rather intimate knowledge of conditions, say that so little has been contracted for that it is plain no interests would have suffered had the opening been delayed until after Labor Day, and it appears that the opening next year will be later than ordinarily, particularly in the event there occur nothing to stiffen prices. Last month's repeat orders for knitted underwear are believed to represent more cases than have been bought for the next light weight season, by considerable. Recently good size jobbers were taking in single case lots of balbriggans by express.

In view of all that was said of the prospective supremacy for nainsook underwear, the late summer business that was taken in balbriggans was in surprisingly large volume, it is stated by several representative manufacturers, who now are inclined to the belief the bals are recovering some lost ground and will be in better call next year than in 1926. Leading distributors say there is little hope such a dream will be visualized, that the nainsook union suit is destined to score further gains. Pull over balbriggan shirts and knee length jean drawers as a combination have been popular and look like a safe guess for 1927.

A leading manufacturer of men's knitted underwear in both heavy and light weights is discouraging mill acceptance of jobbers' sample orders, and will not give them consideration in the lineup for the spring and summer. He points out that a jobber who has bought only a case of samples, for example, and canvasses the retail trade leaves himself in the position of offering goods that must be regarded as the property of the mill. If he meet with resistance and finds a competitive line priced a few cents a dozen lower, his interest in the sample case virtually ceases. He will not be inclined to push a line in which he has no investment, said the manufacturer referred to, who, going further, stated, "we want the favor and business of good jobbers, but are not so eager for it that we will accept orders minus details. If our goods are to be sold by jobbers who do not own them we might as well sell them direct on a commission basis."

This mill executive is out also for another reform. Instead of having commission merchants and selling agents undertake to dominate prices for mills, he would name a flat price and a flat profit for the agents. If the latter saw fit to shade the price for a favored customer at his own expense, "it might be no affair of ours," the manufacturer went on, "so long as goods were invoiced to the jobber at our price, which of course we would not knowingly permit an agent to shade, as we sell under a brand that is widely known and respected. What we are interested in is a getting away from the policy of some agents who, when sales are slow, prevail upon manufacturers to reduce prices for making it easier for an agent to earn a commission."

Upstate Pennsylvania manufacturers of women's cotton underwear for some time have been operating steadily on medium weights, their season for which is near the close. There are fewer such manufacturers, and their ranks probably will be thinned next year, for it is known not a few mills in the upper Schuylkill Valley sections are for sale, a number already having passed out of existence. Mills making the better grades of 14 cut underwear have little of which to complain, from the standpoint of business volume, and for the more strongly entrenched there is also a fair sprinkling of business in 12 cut garments. Manufacturers in and about Reading say they are comfortably situated as to orders for women's light weight bloomers, vests and union suits. Rayon striped lines appear to take precedence.

Women's rayon underwear is being stocked heavier than in previous years in anticipation of it being a big item in the holiday sales, it is stated by some of the more important buyers for women's specialty shops and department stores. According to this source of information, it is each year becoming more popular for gift purposes. Rayon underwear has to force its way, say these shop managers, but once really good lines are properly introduced they sell readily alongside of the glove silk garments.

Sweaters.

It looks as though 1926 will go down in history as the most disastrous year to date for sweater manufacturers. Numbers of mills are idle at a time when ordinarily they ought to be operating under pressure, and as many more are on part time. Manufacturers whose lines have attained a fair measure of popularity are running their plants to almost the limit, and a few might be mentioned as oversold. Even these, it appears, view sweaters this year as so precarious a proposition that they refrained from making for stock, and now are fairly flooded with orders and requests for rush shipments. But mills so situated represent only a small fraction of the sweater industry.

Sweaters have been a serious disappointment to all interests, particularly as to women's lines. It might almost be said without violating truth that woman for the time has eliminated the one time popular sweater coat from her wardrobe. Shaker coats and other types adaptable to use by both sexes can be sold to dealers, but in only a conservative way, and there is an outlet, considerably narrowed, for fancy models. Man seems to have had a falling out with lumberjack coats, but they still are popular with boys.

The 121st meeting of the National Association of Cotton Manufacturers will be held at the Copley-Plaza Hotel, Boston, on October 13th and 14th. Discussion of the Cotton-Textile Institute, of cotton growing in Egypt, of Style, its development and application, and an open forum will feature the sessions, while on the evening of October 13th, a style show and dinner will be held.

With the Publishers

Barn Raisings by Textile Men

"Those days are gone forever!"

This was the exclamation of a salesman who had been looking at a drawing called "The Barn Raising." A small army of men, in the picture, were engaged in raising the huge timbers into place. Others were sawing, hewing and piling. Underneath the picture was the caption:

"In the typical old-time barn-raising the organized strength of the whole community was combined to help a neighbor, and each neighbor's aid was available to all the others and was cheerfully returned by them whenever need arose."

This organized neighborliness was what the salesman said had gone forever.

Not so. Every monthly issue of COTTON is a veritable barn-raising in the textile industry.

Each article in the "How Other Men Manage" section or the "Knitting Kinks" section either outlines a personal experience in some mill or plant, or answers directly the questions submitted by some other mill man. Any of these is just as much a neighborly act as putting a shoulder underneath a giant timber that is to support the roof of a barn. The intention to be helpful is the same. All that is lacking is the actual sight of a group of men working merrily together. And it must be remembered that the barn-raising was as much of a social function as anything else. When actual contact between men and families was more difficult, then the need for sharing labor often provided an excuse for getting together for jollity. Today people are less isolated; they have the telephone, the radio and the automobile to bridge the gaps.

Giving a fellow a lift through the pages of COTTON is only the modern way of making "each neighbor's aid available to all the others." The printing-press makes it possible for textile men to work together more frequently and at periods when lack of time, distances and expense would prohibit their getting together in person. Just as at the barn-raising there were always certain men who were looked to for advice in erecting a strong building that would withstand storms, so does each issue of COTTON contain the addresses of men who know how to build textile-operating structures that are the last word in construction of this character.

Advertisers in COTTON—makers of machinery and supplies—are not always included among the neighbors at first thought. Yet their interests are identical. They are an important part of the whole community of the textile industry, and they know how to saw and hew the timbers of physical equipment that support the walls of skill and experience which are erected by the mill men.

"Austin Will Give Us Speed"

—Plus Recognized Ability

"WHEN will it be ready?" is the first natural question after the Board has authorized plant extension.

Executives know from experience that Austin can answer *that* satisfactorily; because Austin's speed in getting *on* a construction job, and getting *off* again with the project all completed, is proverbial.

Every other detail is handled in the same efficient way when Austin builds—a fact that has won Austin the liberal confidence of big executives everywhere.

Under Austin Undivided Responsibility, *one* executive in the client organization signs *one* contract with Austin covering Engineering, Design, Construction, Equipment—even Finance, if desired. In return, Austin delivers a complete project of any size and for any purpose, fully covered by iron-clad Austin Guarantees on quality of buildings and workmanship; Price; and Delivery Date.

As you plan for building expansion, think of Austin's half-century of *successful* building experience; and remember that practically all of America's Industrial Leaders are Austin clients.

Call Austin into consultation on your preliminary plans. Austin will give you approximate costs and building information. There is no obligation. Wire, phone or use the coupon below.

The Austin Method

Under the Austin Method, your entire project will be handled by one organization and under one contract which—

1 *guarantees a lump-sum price on the complete plant;*

2 *guarantees delivery of a single building or complete plant by specified date, backed by bonus and penalty clause, if preferred;*

3 *guarantees the quality of materials and workmanship throughout.*

THE AUSTIN COMPANY, *Engineers and Builders,* Cleveland

New York Chicago Cleveland Detroit Philadelphia Portland Seattle
Miami Birmingham Pittsburgh St. Louis
The Austin Company of California: Los Angeles and San Francisco
The Austin Company of Texas: Dallas

AUSTIN

Complete Building Service

THE AUSTIN COMPANY, Cleveland

☐ We are interested in the construction of a_____
_____Building_____ft. x _____ft.

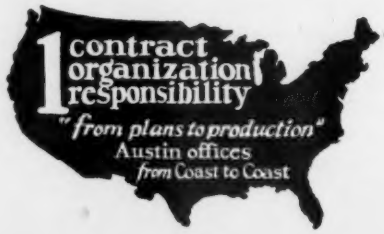
☐ Send me a copy of *"The Austin Book of Buildings,"* your new 100-page book free to Industrial Executives.

Firm _____

Individual _____

Street _____ City _____

C-3-26



With the Publishers

What Mark Twain Didn't Know

It was Mark Twain in his pilot days on the Mississippi, we believe, who was asked by a passenger if he knew where all the snags, sand-bars and other dangers to navigation were. When Mark replied that he didn't the passenger became indignant and wanted to know what right he had in the pilot house, endangering life and property.

"Well, I know where they ain't, ma'am," drawled Mark in reply.

This old story came to mind the other day after somebody had referred to COTTON as a pilot for textile mills. The compliment was accepted with reservations because we have never deluded ourselves for an instant that we could safely guide all sorts of craft down the tortuous streams of profitable mill operation.

Then it came to us, that, like Mark Twain, we had guided some textile men through channels where we had learned from the marks that there were no hindrances to successful navigation.

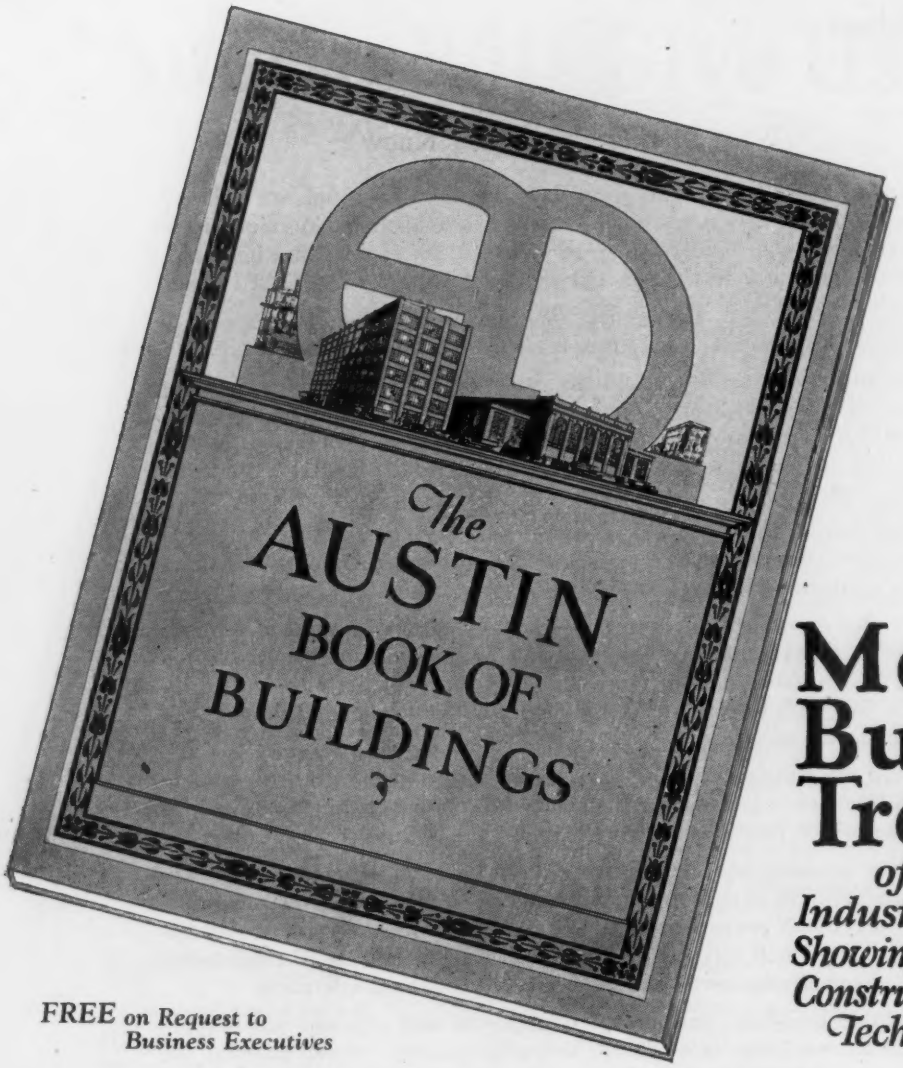
But why are there no hindrances to navigation in some channels? Since 1824, snag-boats have been plying up and down the Mississippi making navigation safe. For more than fifty years, the steel-hulled steamers J. N. Macomb and H. G. Wright, now battered and gray, have been performing this service.

From the time navigation opens in the early Spring until it closes in the Fall, their duty is to patrol the river and remove channel obstructions and snags which might send many boats to the bottom.

There are snag-boats working in the textile industry, too. They are the manufacturers of equipment and supplies, such as are advertised in the pages of COTTON every month. They go into plants and yank out the operating snags which threaten to stave a hole in the side of the good ship Profits. They dredge away the sand-bars of inefficient operation.

Suitable buildings and capable equipment and supplies are beacon-lights on almost every safe-channel to textile success. When charting the courses as followed by smooth-running mills, COTTON has found that many industrial navigators speak glowingly of the patrol work done by this paper's advertisers.

Then there is another angle to this patrol work. Enterprising mill men spend time and effort investigating methods, improving systems, and devising new and better ways for turning out the product. They, too, are snag removers clearing the path to progress and profit. Their own descriptions of how they do these things form valuable contributions to the contents of COTTON each month.



FREE *on Request to Business Executives*

Modern Building Trends—

of Interest to Industrial Executives Showing Developments in Construction with Charts, Technical Data, Etc.

WOULD you like a brief and authoritative statement that would help you determine:

—*Whether the new plant buildings you propose shall be Multistory or Single Story?*

—*How branch plants or warehouses can be successfully located and built?*

—*How soil-bearing pressure may affect your building costs?*

—*What the advantages of a wood block floor are as against a concrete floor?*

—*What kind of a roof structure you should use on a given type of building?*

Valuable light on these questions and many others, together with relative costs of different types of construction, are contained in the 100-page "Austin Book of Buildings," illustrated above.

"The Austin Book of Buildings" reflects The Austin Company's position of standing and authority in the building field. The facts it presents on Building Design, Construction and Equipment, are supported by Austin's successful and continually growing experience of more than a half-century.

There are many executives who keep a copy of "The Austin Book of Buildings" handy for personal reference. We suggest you write immediately and get your own copy of this entirely new and different edition.

THE AUSTIN COMPANY · *Engineers and Builders* · **CLEVELAND**

New York Cleveland Pittsburgh St. Louis Chicago Philadelphia Seattle Portland Detroit Birmingham Miami
The Austin Company of California: Los Angeles and San Francisco The Austin Company of Texas: Dallas

THE AUSTIN COMPANY, Cleveland
You may send, marked for my personal attention, a copy of the new 100-page "Austin Book of Buildings."

Firm _____

Individual _____

Address _____

C-4-26

AUSTIN

Complete Building Service

With the Publishers.

The Theater With Plenty of Stages

News comes from London of the establishment in Charing Cross Road of a quaint little theater called the Alcazar. It contains three platform stages arranged side by side along the side of a fairly large hall. There are no seats. The patrons pay a small admission fee and after watching the act on one platform move on to the next. The acts are given in succession, the actors stepping down the promenade to the dressing room as soon as they are finished, while the audience moves on to the next platform which has been prepared for the following turn. The show is continuous from noon to midnight.

The dictionary defines "theater" as "a place where events, especially of importance, are enacted; the drama." Then the pages of COTTON comprise a theater, because therein are re-enacted the important and dramatic events of the textile industry.

But in COTTON there are more than three stages side by side. Every article is a stage upon which leading textile men and mills are the characters portrayed. Naturally the plots are interesting to the initiated. Mill men, viewing these performances, applaud when the hero or leading man "puts across" something which they recognize will be of real value in their own mills. An example of this sort might be cited in reference to the payroll and production record which appeared in the "Knitting Kinks" section of February COTTON. The secretary of a well known hosiery mill wrote to us to inquire if he could get one of these complete forms and adapt it for use in his mill. He declared it the most complete form of its kind he had ever seen. COTTON'S editors immediately got in touch with the mill manager who devised this form, secured the necessary permission and a sample form, thus making everybody happy.

But to return to our simile.

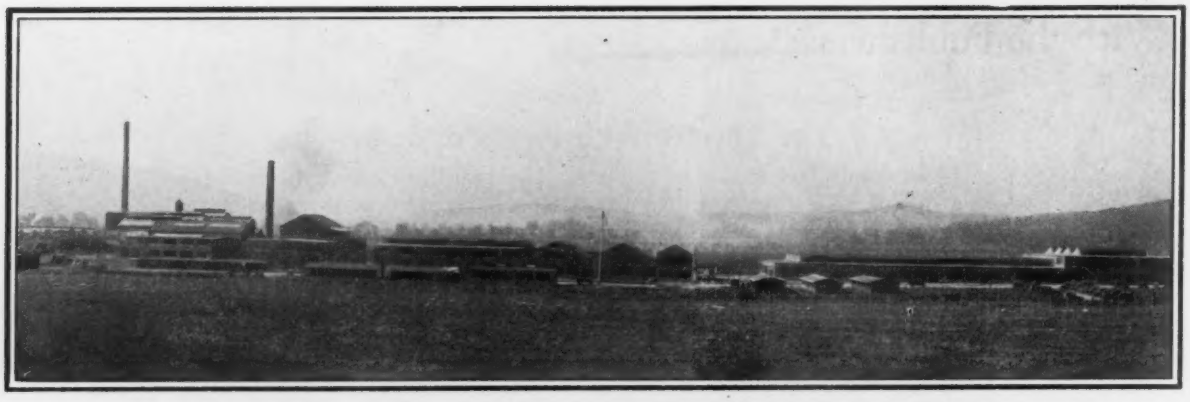
The bill in COTTON'S theater is always kept up-to-date. The dramas unfolded on the many different stages are those of today. You recognize the characters at a glance and say "That's true to life," or "That will fit my mill."

However, all the performances in this many-staged theater of COTTON'S are not produced under the direction of the editorial staff of the paper. There are innumerable stages for rent all the time.

These stages are rented, in most cases, from year to year, month in and month out, by discerning manufacturers of equipment and supplies who welcome the opportunity of placing a description of their productions before carefully selected and appreciative audiences.

While manufacturers who advertise through these stages of COTTON'S present stories in which the enemies of Efficient Operation are finally vanquished, they also give superintendents some interesting specialties—introducing equipment in feats of skill, strength and endurance.

And there's one big advantage COTTON'S multi-stage theater has over the one in London: the patrons do not have to stand, but can see the whole show of the textile industry while seated at their desks or in their easy chairs at home when they have time to relax and think.



American Cellulose and Chemical Manufacturing Co. at Amcelle, near Cumberland, Md. Austin designed, built and equipped 15 buildings composing this huge plant, one of the largest artificial silk plants in the country.

Austin Knows How to Build!

YOU can profit by the unparalleled background of experience which The Austin Company has acquired in building for America's industrial leaders over a half-century.

By standardization; by large buying of steel, sash and other essential materials; by centralizing all details of the project in one responsible organization, Austin has eliminated much expense in duplication.

If you want the new plant or extension quick, to take care of suddenly expanding business, Austin can deliver 100,000 square feet of floor space in 60 working days, of the finest type of permanent construction.

Austin Buildings lend themselves readily to economical expansion. You don't need to build too far ahead of your present needs, but build what you need now in the Austin way and add more floor space when you get the business to require it.

Austin will guarantee in advance the total cost; the delivery date, with bonus and penalty clause if preferred; and the quality of materials and workmanship.

Talk it over with Austin—there's an office near you. Wire, phone, or mail the coupon. There's no obligation.

THE AUSTIN COMPANY, — *Engineers and Builders* — CLEVELAND

New York Cleveland Pittsburgh St. Louis Detroit
Philadelphia Seattle Portland Chicago
Birmingham Miami
The Austin Company of California: Los Angeles and San Francisco
The Austin Company of Texas: Dallas

THE AUSTIN COMPANY, Cleveland

We are interested in the erection of a.....

building.....x....., number of stories

..... You may send me a personal copy of "The Austin Book of Buildings" free to Industrial Executives.

Firm .....

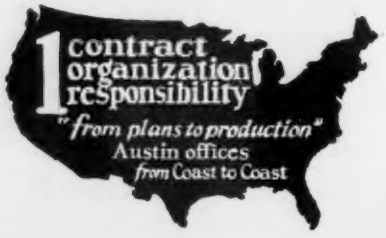
Individual .....

Street ..... City.....

C5-26

AUSTIN

Complete Building Service



With the Publishers.

The Lovely Lady of Circus Days.

Running a textile mill is no circus, but the comment upon how easily the beautiful lady rider seemed to turn a somersault on the back of a horse started an interesting explanation.

"Yes she does seem to do it without effort," the salesman agreed, "but few of the people watching her know of all the hard work behind the short performance they see. And they don't know how constantly she is working to keep herself in trim. When I was younger I used to be head usher, announcer and had the program privilege at a 'ring barn.' Not all the performers with the big circuses find winter engagements, especially some of those with heavy animal acts. In our town we had a 'ring barn.' It was a frame structure with a circus ring in the center, a stage on one side, a big stable in the rear and seats for 1,500 persons. Living expenses and animal feed were low there and star performers from the biggest circuses would winter there. Every day they would practice and three nights a week there'd be a show to pay expenses. That was easy because we had riders, acrobats, wire-walkers, jugglers, trick mule men and even the world-famous clown at that time.

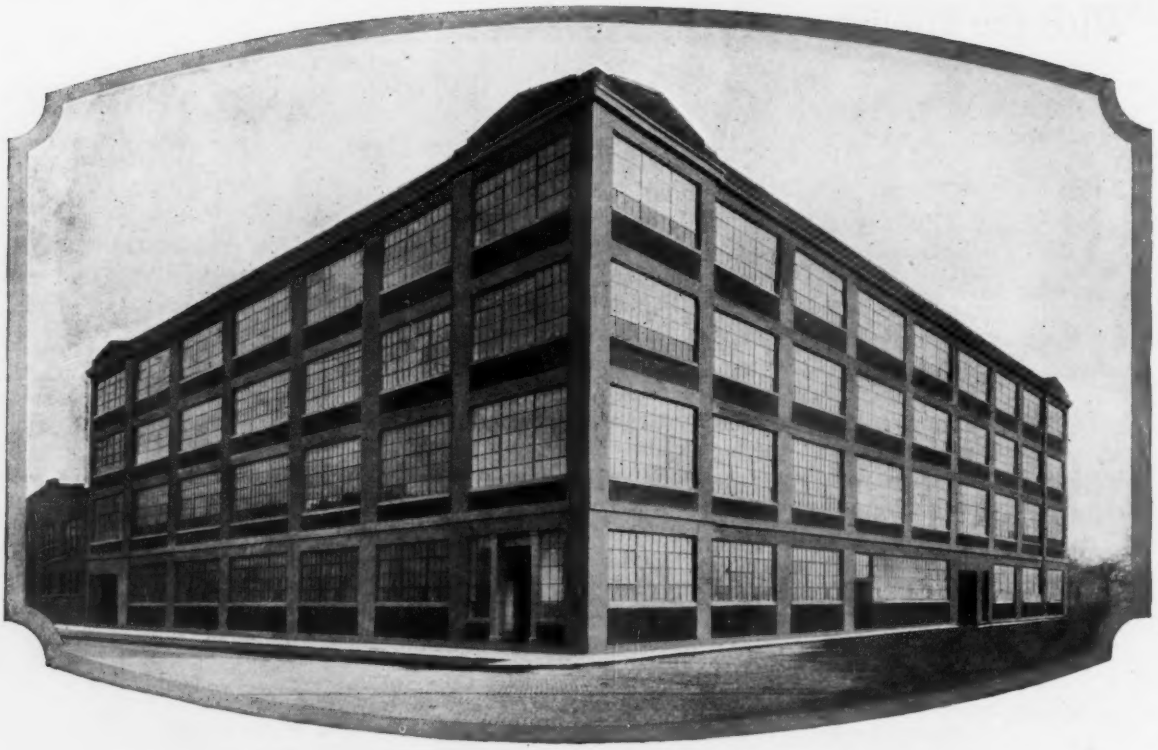
"But they never let up trying to perfect their acts. Every day, one and all would take turns rehearsing in old clothes. And another thing, no matter how daring they might be in a public performance, they never took any unnecessary chances. There was the 'mechanic.' That was an arm revolving from a pole in the center of the ring. A rope ending in a life-belt ran through a pulley on this arm. The rider wore the belt and somebody held the end of the rope. If the horse shied from under or there was a misstep the rider did not fall, but was suspended in the air—but maybe you saw the device used in that funny scene of Jackie Coogan's in "Circus Days."

"Well, I had a friend—and he's riding with one of the big shows now—whose ring stunt was to turn a double back somersault on a galloping horse, but he took no chances; when he practiced he wore the life belt."

Sometimes it seems to the spectators that a particular textile mill goes through its performances all too easily. But behind the seeming stunt is generally a story of long and constant training. COTTON finds, in most cases of successful operating that it studies, the accomplishment is due to careful preparation and keeping from getting "soft" or out of shape. That is the purpose of nearly all articles published in this paper—to give other mill men a chance to see what lies behind the finished performance; to show how others manage.

Even the most daring performer used the life-belt whenever possible, it is related. What better assurance of safety for the textile mill is there than the equipment and supplies that are advertised in the pages of COTTON?

Then there is another point where the mill and the circus parallel. The performers at the "ring barn" used to spend part of their time working out new acts, trying to produce something more attractive or do the same act in a different way. Mill men are like that. New methods are constantly under consideration or experimental trial. The results of these experiments form another class of articles that are published in COTTON from time to time. They show the result of time and effort along some certain lines of thought. They point the way toward an improved production of quality product.



Why Builders of Big Business Choose Austin Complete Building Service

QUALITY, price and delivery are the immediate considerations of the purchaser, but confidence is the great underlying principle of good business.

Austin has had more than 50 years of building experience and has the confidence of business leaders, confidence earned by demonstrated ability. Whether your project calls for a complete mill, such as was constructed for The American Cellulose and Chemical Manufacturing Co. at Cumberland, Md., costing a million and a half, or an extension to a finishing mill, Austin can serve you to advantage.

The Austin Method of Undivided Responsibility is the basis of Austin's satisfactory building service—engineering, building and equipment all handled under one contract by one responsible organization.

Austin guarantees the quality of materials, workmanship, total cost in advance, and delivery date, with bonus and penalty clause if preferred. A nation-wide organization makes Austin Complete Building Service available for immediate action anywhere.

Building costs and other valuable data will be furnished promptly, whether the project calls for 50,000 or 500,000 sq. ft. Wire, phone the nearest office, or mail the coupon.

THE AUSTIN COMPANY, - *Engineers and Builders* - Cleveland

New York, Chicago, Cleveland, Detroit, Philadelphia, Portland, Seattle, Miami, Birmingham, Pittsburgh, St. Louis
The Austin Company of California: Los Angeles and San Francisco The Austin Company of Texas: Dallas

THE AUSTIN COMPANY, Cleveland
We are interested in the erection of a_____
Building_____x_____, number of stories_____
You may send me a personal copy of "The Austin Book of Buildings," free to Industrial Executives.
Firm _____
Individual _____
Street _____ City_____
C. 6-26

AUSTIN
Complete Building Service

With the Publishers

A Cure for "Busy Mania"

"After working twenty-two years as a bookkeeper in one of the large State Street department stores, Frank Dixon suddenly arose from his desk, put on his new straw hat and hurried over to State and Madison Streets," says a writer in the Chicago News, "to tell the world his troubles. Standing in the center of the crossing, at 2 o'clock of a busy afternoon, Dixon threw his arms in the air and began to shout.

"It's all mixed up," he cried. "I can't stand it. The whole thing's out of order."

The police rescued him from the traffic congestion that occurred at what is generally referred to as the world's busiest corner. When the doctor at the psychopathic laboratory was examining him as to his sanity a strange scene occurred.

"The bookkeeper had sprung to his feet. His hands were in the air. 'I'll fix it. I'll fix it now,' he was shouting. And with no further ado he plunged at a pile of medical documents, journals and memoranda that cluttered up the top and bottom of the doctor's desk. For fifteen minutes the bookkeeper labored. He stacked all the journals up in order. He hurled all the papers into a wastebasket and jumped on the heap with both feet. He cleared the top of the desk—and then subsided in a faint."

The doctor spoke a German word a yard long. "A very interesting case—the first I've seen in America. It means 'busy mania.' "

Sometimes textile men are afflicted with a sort of "busy mania" when the thing most needed by them and their business is a careful study of a trade paper like COTTON.

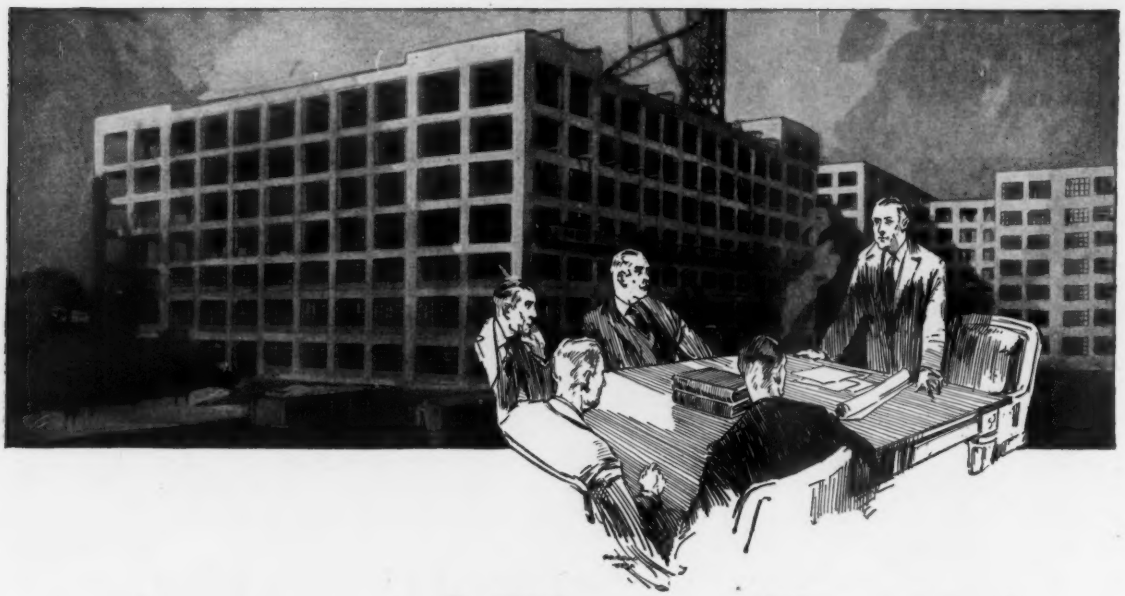
"Beware of the energetic man," Fred C. Kelly, prominent business writer warned the Executives' Club of Chicago. "He makes his hands and feet work while his brain is in neutral," adding that "the lazy man usually makes the best executive because he is looking for short cuts."

COTTON is not championing the shirker. But there is no doubt that the mill superintendent who fails to keep posted on what the leaders of the industry are accomplishing is doing unnecessary labor. Such men as these become victims of what the late Dr. E. H. Ochsner told the Chicago Medical Society was "a disease little known and understood by the medical profession. This disease, known as chronic fatigue intoxication, in lieu of a better name, has never been studied exhaustively nor described adequately.

"The disease attacks only those who are mentally and physically alert and who turn out prodigious amounts of work—for a time. It cuts down a class of men and women who are of great value to the community at a time when, through experience and with ripened years and judgment, they would otherwise have reached their periods of highest capacity."

These facts are impressed on us because we hear an occasional operating executive telling his friends and acquaintances that he never reads, not even the daily newspapers, because he has no time. A man of this type seldom or never attends group meetings of mill men for technical discussion—and for the same reason.

What is the use of a mill superintendent wasting his life working out problems that already have been solved by other mills and by the makers of equipment and supplies? And when he can find in COTTON each month just how and why to take the proper steps to overcome such problems.



Acres of Floor Space!

ARE YOU the Executive responsible for building a plant like this for *your* Institution?

Then these advantages are yours, when Austin builds for you:

First-class design and construction, with quality of materials and workmanship guaranteed;

Fast time, with delivery date guaranteed, under bonus and penalty clause, if preferred;

Right price for the project complete—a guaranteed lump-sum figure;

Thorough satisfaction; buildings will be *a permanent asset* to your Company.

Under the Austin Method of Unit Responsibility, Austin will build your whole project, covering acres of floor space; or will construct a single building.

Unit Responsibility means that Austin shoulders the whole load—Design, Construction, and Equipment—even assisting you in Financing, if desired.

Austin has built *successfully* for Industry for over Fifty Years. Austin stands today pre-eminent in Experience, in Performance, in Organization, and in Financial Stability.

Your big, new program of plant expansion may be just now taking form. Austin will gladly help you get it organized soundly. You may have much to gain by careful analysis, while the project is still in the embryo stage. Call Austin—no obligation of course.

THE AUSTIN COMPANY *Engineers and Builders* **Cleveland**

New York, Chicago, Cleveland, Detroit, Philadelphia, Portland, Seattle, Miami, Birmingham, Pittsburgh, St. Louis
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Firm _____
Individual _____
Street _____ City_____
C-7-26

AUSTIN

Complete Building Service

With the Publishers.

A Pilot Engine for Your Tours

Every once in a while a president of the United States makes a trip to different parts of the country in order to get "contact." At such times, political writers generally make references to "building up party fences."

A trip like that always suggests to COTTON the necessity for textile executives always keeping their "fences" built up against the possibility of unlooked-for swings to the "dark horse" of losses in profits through poorer work.

It is a good thing for the financial and also for the operating executive to know what is going on in the field. The executive head of a mill cannot spend his time traveling from plant to plant and in Pullmans and in hotels. But he can, through the text and advertising pages of this paper, take a mental journey any evening to the most important centers and find out what live mill men are thinking and doing about production and costs and equipment.

He can make his "swing around the circle" every month.

If this contact with other minds is valuable to the president of the country, contact with the other leaders of the textile industry is equally important to a mill president and superintendent. And the mill man can have it without all the long weary journeys of actuality.

Just as the presidential trains have pilot engines that go ahead and make sure that the tracks are clear, so does COTTON have its pilot engines. These pilot engines are the trained writers and the advertisers of equipment and supplies.

The trained writers make a thorough inspection of the tracks to textile success; they are concerned in taking mill superintendents over only those routes which can be traveled in safety.

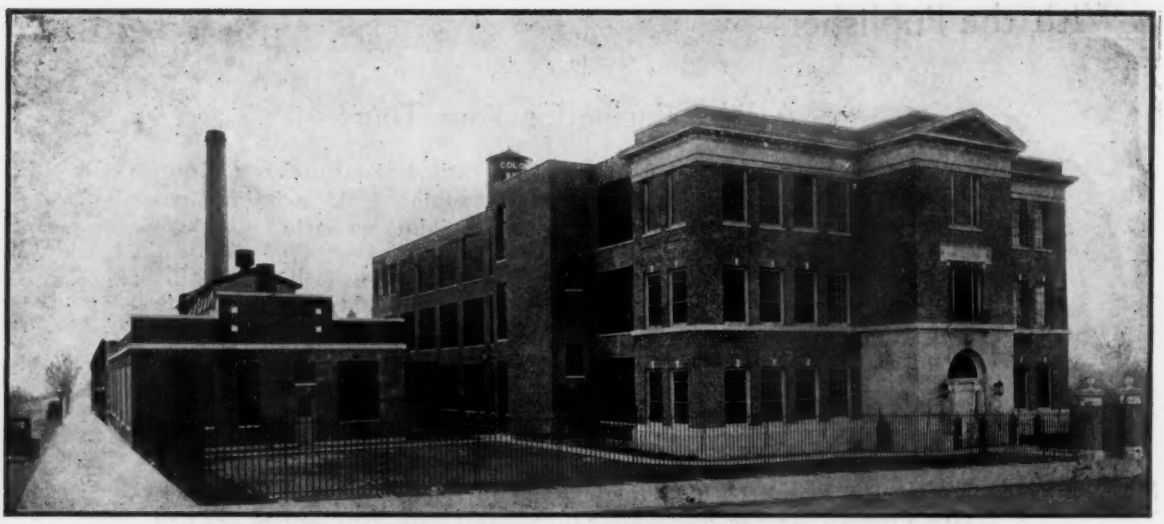
Makers of equipment and supplies that are advertised in COTTON might be called with all due respect to them the right-of-way maintenance men. They go ahead and remove all the obstructions to profitable operation. They see that all the bridges and equipment are properly strengthened. They see that all the switches leading to the sidetracks of poor quality work are closed and spiked.

After these men have gone over the road to textile mill success and found it free of the possibilities of broken rails and wash-outs, then the route is safe for the mill executives when each month they start their swing around the circle—through the text and advertising pages of COTTON.

That is why they write us expressing satisfaction. One mill man says "Enclosed find $1.00 and renewal blank for my subscription to COTTON. I wouldn't be without it. I consider it the greatest value possible for a dollar. I am reading several other textile magazines, but I get more out of 12 copies of COTTON than 52 copies of the others."

Another mill manager says, "There is no magazine that I read as carefully as I do COTTON."

There's a reason.



Large knitting mill in Philadelphia, including dyehouse with necessary equipment, designed, built and equipped by Austin

Take Advantage of Austin Building Service

IN every branch of the cotton industry Austin Complete Building Service offers very definite advantages. Mills, bleacheries, dyehouses, new plants or additions to present facilities—whatever the construction contemplated Austin is prepared to furnish it with speed, economy, and guaranteed quality.

Austin will make surveys and careful analyses of conditions in the proposed new location; will furnish information relative to building sites, comparative costs, and other essential data.

Maximum usable floor space, with abundant daylight and ventilation, will be assured in the plans Austin will submit.

Austin can handle the complete project, including design, construction and equipment, or will work from your plans.

Written into the contract will be these definite guarantees:

A lump-sum price on the job complete.

Delivery by a specified date, with bonus and penalty clause if preferred.

Guaranteed quality of materials and workmanship throughout.

Get in touch with Austin before you begin to plan for new building construction.

THE AUSTIN COMPANY *Engineers and Builders* **Cleveland**

New York, Cleveland, Philadelphia, Seattle, Chicago, Detroit, Portland, Miami, Birmingham, Pittsburgh, St. Louis
The Austin Company of California: Los Angeles and San Francisco. The Austin Company of Texas: Dallas

THE AUSTIN COMPANY, Cleveland
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Individual _____
Street _____ City_____
C-8-26

AUSTIN
Complete Building Service

With the Publishers.

When Bricks Served as Trade Papers

Imagine yourself, if you can, as a textile man, back 2,000 years before the Christian era, in the days before Abraham, at Ur of the Chaldees and getting anything like a trade paper. Picture a chariot or donkeys pulling up with what looked like a load of bricks to be carried in and placed on your desk or whatever served for the purpose.

Yes, they did record business and industrial methods even in those days.

Clay tablets "revealing much of the business life" have been uncovered, according to Dr. Leon Legrain of the University of Pennsylvania, recently returned from cooperating with the British Museum in excavations, says an interviewer in the Public Ledger.

"Many of the tablets which we found were worm-eaten and moulded of mud. They had to be packed in tins and baked in ovens before we could use or read them. Many hundreds of the tablets are still in the tins as we packed them, for we have not had time to read all of their story.

"But they reveal much of the business life of the temple whose sacred area we are excavating. We know that one hundred and sixty women were employed there making twelve different kinds of clothing.

"The clothing was paid for in produce according to its weight, after the cost of the food to the workers had been added on.

"There was a regular scale of wages for young girls and old women, as well as for full-grown workers. They would receive proportionate quantities of oil and grain.

"A good wife would cost about three and a half donkeys. But a man would have to work two years for a donkey. A year's wages to a laborer who was skilled might average half a donkey. Much of the commerce of ancient Ur was calculated on that basis."

Thus back, back into the centuries, goes the habit of setting down business methods and costs. Clay tablets and graving on them served the same purposes that paper and fast printing presses do now-a-days for COTTON. The write-up of a plant or process and the cost figures on it is a write-up whether it is on a brick or in a book.

The same theme is used—"How they do it successfully."

But there is something which makes COTTON decidedly valuable to mill superintendents that has not been reported by the scientists digging in the ruins of ancient Ur. They have not called our attention to anything that serves as efficiently as the advertising pages of COTTON. Conditions change faster now-a-days and new equipment and supplies are placed on the market oftener. With COTTON'S advertisers and executives meeting through its pages, the paper performs a service that as not equalled by any ancient market place.

It is for these reasons and others that our mail brings us comments such as this one from a mill manager:

"I might add that I always find COTTON a most enlightening, instructive, and helpful publication. I have been taking it for a number of years, and wherever I go COTTON goes too. In addition to reading it myself, I see to it that the responsible members of my organization read it. In fact, at our monthly overseers' meeting, which is to be held tonight, one of the overseers is to read a paper, the basic thought of which was developed in one of your issues several months ago."

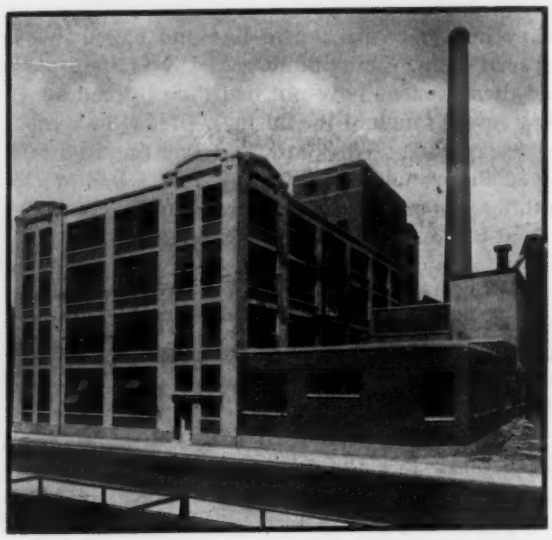
And the general manager of a knitting mill says:

"I am glad to note that your publication is taking a deeper interest in knitting and devoting more space to it. COTTON is of great benefit to us and we look forward to each succeeding issue."

When Days Count

When you get ready to build your new plant, every day that can be saved in its completion after the contract is signed is a day of profit for you.

Under the Austin Method a building project that would ordinarily take six months to complete, is finished in sixty to ninety working days.



Austin Daylight Plants for textile mills and other industries all over the United States testify to the unusual experience which this Company has had. Characteristic features which all these plants possess are daylight interior, abundant ventilation and large unobstructed floor areas.

You sign only one contract when you deal with Austin. That covers everything—architectural service, engineering, construction and equipment. No division of responsibility. No pyramiding of profits as with sub-contracts.

Austin guarantees the total cost in advance for the complete plant; delivery date, with bonus and penalty clause if preferred; and quality of materials and workmanship.

When days count, Austin saves months, and furnishes a plant that represents the utmost value for your building dollars.

Wire, phone or mail the coupon for approximate costs and valuable building data.

THE AUSTIN COMPANY — *Engineers and Builders* — Cleveland

New York, Cleveland, Philadelphia, Seattle, Chicago, Detroit, Portland, Miami, Birmingham, Pittsburgh, St. Louis
The Austin Company of California: Los Angeles and San Francisco. The Austin Company of Texas: Dallas

THE AUSTIN COMPANY, Cleveland
We are interested in the erection of a _____
_____ Building
_____ x _____, number of stories _____
You may send me a personal copy of "The Austin Book of Buildings," free to Industrial Executives.
Firm _____
Individual _____
Address _____

C-9-26

AUSTIN
Complete Building Service

With the Publishers.

Knocking "Home-Runs" in Business

Babe Ruth has made a national reputation knocking home runs. This ability has won for him the sobriquet of the "Home Run King."

When the teams of the National and American base ball leagues leave their winter training quarters in the South, it has become the accepted practice to stop over at intervening cities enroute northward and play occasional exhibition games. This serves the double purpose of giving the "fans" in these cities a chance to see big league teams in action and also aids in defraying some of the training expenses.

Not so long ago the "New York Americans" stopped over in Atlanta for such an exhibition game with another big league team. The "King of Swat" was with them, and a local player began quizzing him on how he succeeded in hitting so many "homers" in the course of a season.

In answer to this question Ruth replied: "There is no trick about it. I simply hit at every ball that looks like it might be within reach. If I waited to get a **good** ball I would be 'walked' every time I come to bat. You can readily understand that."

This reply contains a complete sermon for the man who offers alibis, whether he be a mill man selling textile products or whether he represents some other organization whose chief customers may perhaps be the men operating the cotton mills.

The salesman who complains that "business is bad" and takes "time out" while he waits for it to improve will never have his name listed among the leaders in his profession.

On the other hand, that salesman who emulates the Babe Ruth method and "hits" at every prospect who looks like he might be interested, will frequently surprise himself and his firm by knocking a "home run" in the shape of an unexpected contract.

It's the law of averages combined with good judgment or a selective eye, these latter terms meaning the same thing. The man who goes after a hundred selected prospects, even if he does think there isn't a real good one in the group, will knock many more "home runs" than will the man who writes the factory an alibi about business conditions and then spends the afternoon at the ball game.

The operating executive in the mill will find it easy to fall into the alibi shooting class when production, quality or cost is not up to the mill standard. That's why COTTON in its reading and advertising pages is continually presenting methods and equipment that has proven successful under certain specified operating conditions.

What the readers think of this system may be gauged by the following comment from an operating executive under date of July 31st:

"I read COTTON each month and find it very interesting. I think it far the best textile journal off the press today. I get a good deal out of 'Knitting Kinks,' 'How Other Men Manage,' and 'An Old Timer Says;' and I read 'Angel Stuff' in the July number which is fine. It hits most of us but that is what a fellow needs sometimes.

"I am sending with this letter my personal check for $3.00; $1.00 for my renewal subscription and $2.00 for two new subscriptions to COTTON to be sent to * * * *."

At this point we pause—

Saving Months in Building

Time is Money and Austin Saves Time—*From Bare Site to Busy Plant Covering Twenty-five Acres in 90 Working Days*

UNDER the Austin Method, a huge building project which usually requires 9 months or more is completed in 90 working days.

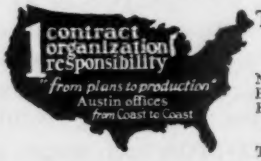
So complete is the coordination of layout, design, construction, and equipment, all covered by the Austin Contract, the tremendous project in all its mass of details moves forward with a progress undreamed of under any form of divided responsibility.

The Austin Contract guarantees total cost of the project in advance; delivery date, with bonus and penalty clause, if preferred; and quality of materials and workmanship.

Hundreds of Austin-built plants, many of them representing repeat contracts with America's industrial leaders, testify to the efficient design and permanence of Austin buildings.

Austin can do this anywhere, anytime, because it has the personnel, the resources, the experience and capacity. To such an organization can a ten-million-dollar plant project be entrusted with full confidence of its being completed when you want it and as you want it.

Wire, phone the nearest Austin Office, or mail the coupon.



The AUSTIN COMPANY
Engineers and Builders
CLEVELAND

New York Chicago Cleveland Detroit
Philadelphia Portland Seattle Miami
Birmingham Pittsburgh St. Louis
The Austin Company of California:
Los Angeles and San Francisco
The Austin Company of Texas: Dallas

THE AUSTIN COMPANY, Cleveland
We are interested in the erection of a _____
_____ Building
_____ x _____, number of stories _____
You may send me a personal copy of "The Austin Book of Buildings," free to Industrial Executives.
Firm _____
Individual _____
Address _____

C-10-26

AUSTIN

Complete Building Service

AMONG COTTON'S READERS

Oscar D. Grimes,
Vice-President and General Manager,
Athens Manufacturing Company,
Athens, Georgia

President, Southern Textile Association.

"For years I have subscribed to COTTON for myself and my overseers, because I believe it will help and improve any mill man who reads it. From the standpoint of real direct benefit to a man operating a cotton mill, I consider it the leading journal in the field. I have kept a permanent file of my copies for a number of years."

Oscar D. Grimes

NATIONAL ERIE SCARLET 3B

A NEW AND IMPORTANT ADDITION TO OUR LINE OF DIRECT SCARLETS FOR BATHING SUITS AND SWEATERS

THE principal application of this dye is on wool and silk. On mixed goods, it dyes both these fibres the same depth, and heavier than the cotton. It produces bright scarlet shades on wool of good fastness to light, washing, fulling, sea water, and perspiration, and of good fastness to washing and light when dyed on silk.

National Aniline & Chemical Co., Inc.

40 Rector Street, New York, N. Y.

BOSTON	PHILADELPHIA	SAN FRANCISCO
PROVIDENCE	CHICAGO	MONTREAL
HARTFORD	CHARLOTTE	TORONTO

NATIONAL DYES

AMONG COTTON'S READERS

G. A. FRANKLIN,
General Superintendent
The Sibley Manufacturing Company,
Enterprise Manufacturing Company,
Augusta Factory,
Augusta, Georgia
General Chairman, Textile Operating Executives of Georgia

"For the man who has practical problems in a cotton mill, whether he be superintendent or section man, I consider COTTON the greatest help of any paper being published today."

G. A. Franklin

NATIONAL
DIAZINE BLACK VJ CONCTD.

A NEW developed black, particularly adapted for dyeing half-silk hosiery, plain and mercerized cotton, silk, and artificial silk (except acetate silk).

Of excellent solubility and level-dyeing properties, good fastness to light and perspiration, and of excellent fastness to washing.

Product samples obtainable upon request to any of our branches

National Aniline & Chemical Co., Inc.
40 Rector Street, New York, N. Y.

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PROVIDENCE	CHICAGO	MONTREAL
HARTFORD	CHARLOTTE	TORONTO

NATIONAL DYES

NATIONAL N DYES

AMONG COTTON'S READERS

L. L. Brown, General Superintendent,
Clifton Manufacturing Company,
Clifton, South Carolina.

Chairman, Weaving Division, Southern Textile Association.

"I would be as willing to do without my coffee for breakfast as to do without COTTON each month. They both get me off on the right foot."

L. L. Brown.

NATIONAL
DIAZINE BLACK VJ CONC.

A NEW developed black, particularly adapted for dyeing half-silk hosiery, plain and mercerized cotton, silk, and artificial silk (except acetate silk).

Of excellent solubility and level-dyeing properties, good fastness to light and perspiration, and of excellent fastness to washing.

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NATIONAL DYES

NATIONAL N DYES

AMONG COTTON'S READERS

George W. Murphy, Superintendent,
Columbus Manufacturing Company,
Columbus, Georgia.

"I have found COTTON very instructive and consider it very valuable and necessary to a practical man wishing to stay abreast of modern methods of manufacturing textiles. We see that all of our overseers receive COTTON regularly."

Geo. W. Murphy

NATIONAL SOLANTINE BLUE FF

A Fast-to-Light Direct Blue

THIS is a new addition to our line of Solantine Dyes and is particularly recommended for producing medium shades of blue on cotton and on artificial silk. In dyeing mixtures, animal fibres are left clear.

Of excellent solubility, dyeing level, and possessing good resistance to metals, National Solantine Blue FF may be used in all types of dyeing machines. Fastness to sunlight, water and perspiration, excellent. Yields perfect whites when discharged with hydrosulfite.

Product samples with full technical information obtainable from any of our branches.

National Aniline & Chemical Co., Inc.

40 Rector Street, New York, N. Y.

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PROVIDENCE	CHICAGO	MONTREAL
HARTFORD	CHARLOTTE	TORONTO

NATIONAL DYES

NATIONAL N DYES

AMONG COTTON'S READERS

L. R. Gilbert, Superintendent,
Caraleigh Mills Company,
Raleigh, North Carolina.
Chairman, Boardof Governors, Southern Textile Association,

"Your paper is unique in that it always carries a message that tends to stir the ambition of its readers, whatever their age."

L R Gilbert

NATIONAL ERIE BLACK BF

A New Direct Black of Pronounced Utility

THIS new product is adapted to all varieties of fabrics usually dyed with Direct Blacks of this class. It will be found useful for cotton, rayon, pure and tin weighted silks and cotton and silk hosiery.

Owing to its good cold dyeing properties, National Erie Black BF is especially adapted for speck dyeing.

Soluble and level dyeing.

Readily discharged with hydrosulfite.

National Aniline & Chemical Co., Inc.
40 Rector Street, New York, N. Y.

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PROVIDENCE	CHICAGO	MONTREAL
HARTFORD	CHARLOTTE	TORONTO

NATIONAL DYES

NATIONAL N DYES

AMONG COTTON'S READERS

D. W. Lance, Superintendent,
Monticello Cotton Mills,
Monticello, Arkansas.

"I have been reading COTTON for about 16 years and have found it very helpful to me in my mill career. I first subscribed to COTTON when I was overseer of weaving, and have enjoyed reading it very much. I consider it a good educational influence in the textile industry."

D. W. Lance.

NATIONAL ERIE BLUE GREEN CW

A recent addition to the National's line of Direct Dyes, possessing excellent solubility and good level dyeing properties. Its dull green tone makes it desirable as a shading product, dyeing cotton, wool, and silk practically the same shade.

Product samples with full technical information upon request from any National Branch.

National Aniline & Chemical Co., Inc.
40 Rector Street, New York, N. Y.

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PROVIDENCE	CHICAGO	MONTREAL
HARTFORD	CHARLOTTE	TORONTO

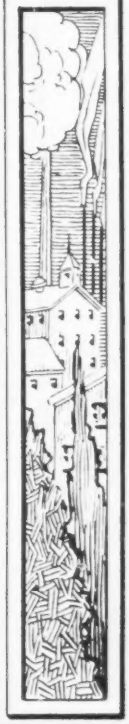
NATIONAL DYES

AMONG COTTON'S READERS

Hugh S. Clarke, Vice-President
C. R. Miller Manufacturing Company
Miller Cotton Mills Department
Waco, Texas

"COTTON so completely fulfills my idea of a trade journal that I require all my overseers to read it. I consider the reading of COTTON to be essential to my own success. COTTON is in a class by itself and is certainly doing a splendid piece of work for the industry."

Hugh S. Clarke



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NATIONAL DYES

NATIONAL N DYES

AMONG COTTON'S READERS

J. G. Coman, Superintendent,
Mexia Textile Mills,
Mexia, Texas.
President, Texas Textile Association.

"I have been a constant reader of COTTON for many years, and consider it a necessary publication for those interested in cotton manufacturing."

J. G. Coman

NATIONAL SOLANTINE YELLOW 4GL

AN addition to our line of Fast-to-Light Direct Dyes, producing pure greenish yellow shades.

Its good solubility and inertness to metals make it well suited for use in all types of dyeing machines. Dyes level and may be used in combination with other direct dyes. Of particular use on cotton, rayon, and pure and tin-weighted silks.

Readily discharged with hydrosulfite.

National Aniline & Chemical Co., Inc.
40 Rector Street, New York, N. Y.

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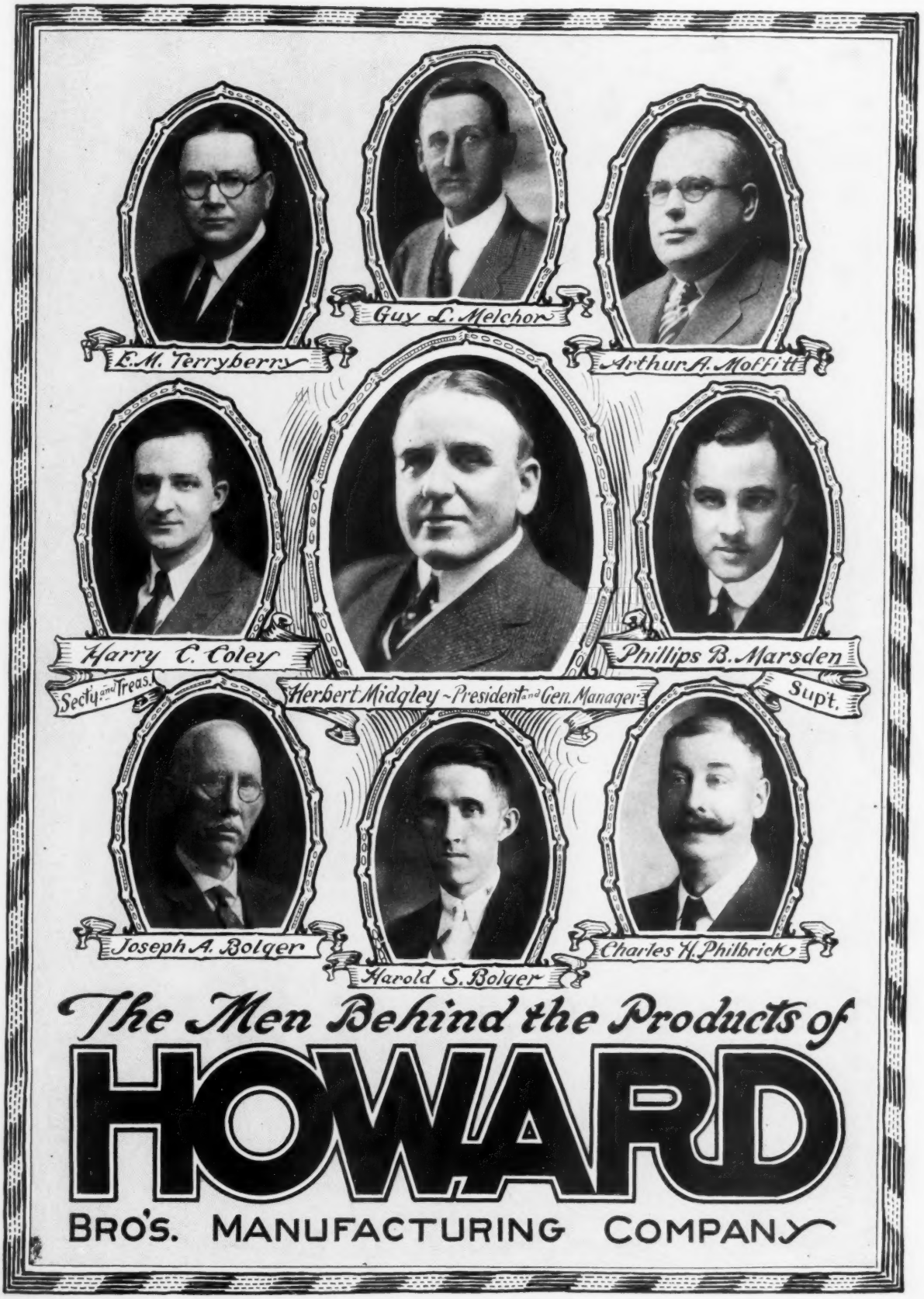
PROVIDENCE	CHICAGO	MONTREAL
HARTFORD	CHARLOTTE	TORONTO

NATIONAL DYES

NATIONAL N DYES


E. M. Terryberry
Guy L. Melchor
Arthur A. Moffitt
Harry C. Coley
Herbert Midgley ~ President and Gen. Manager
Phillips B. Marsden
Secty and Treas.
Supt.
Joseph A. Bolger
Harold S. Bolger
Charles H. Philbrick
The Men Behind the Products of
HOWARD
BRO'S. MANUFACTURING COMPANY

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AN addition to our line of Fast-to-Light Direct Dyes, producing pure greenish yellow shades.

Its good solubility and inertness to metals make it well suited for use in all types of dyeing machines. Dyes level and may be used in combination with other direct dyes. Of particular use on cotton, rayon, and pure and tin-weighted silks.

Readily discharged with hydrosulfite.

National Aniline & Chemical Co., Inc.
40 Rector Street, New York, N. Y.

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PROVIDENCE	CHICAGO	MONTREAL
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NATIONAL DYES

NATIONAL N DYES

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Supt.
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Charles H. Philbrick
The Men Behind the Products of
HOWARD
BRO'S. MANUFACTURING COMPANY

What is Good

WHEN all the "bull" has been thrown out and everything said and done, there are still three big things left that answers the question of "What is good card clothing"—the materials —the men and the plant!

The Howard Laboratory searches out the honest steels, fabrics and every other material that goes to make Howard products, and every piece of material has to pass a rigid test before it is used. The buying power of an immense plant enables such high quality materials to be used without increased cost over other products on the market.

The men who make Howard products, headed by Mr. Herbert Midgley with many years of experience as a card setter before he became connected with Howard Brothers in 1898, are everyone of them master craftsmen in their line. Many of these men are old heads who have been with Howard Brothers almost from the organization, some 60 years ago, and long years of experience in making card clothing has perfected every detail of manufacture, every move watched with care and pride in turning out a product they know is better than the best.

The plant and the equipment, which began with a little building in 1866, has steadily grown because such quality and care in manufacture was bound to be recognized. Today, the highly modern plant with thousands of square feet of floor space, and modern equipment, enable a still greater production of Howard products while retaining the personalized, minute inspection of the old heads at every point of manufacture.

Howard Card Clothing is the result of honest effort—it goes as far as honest materials and expert manufacturing experience can make card clothing go, no matter where it comes from. It is tougher, stiffer and stronger, although easy to grind, and does not become brittle. It does not require so many grindings. It does not hook in ordinary use. The fabric gives perfect service with less stretching and shrinkage.

And everyone of the other Howard Products are made with the same care and precision as Howard Card Clothing.

Last, but not least by any means, is the fact that every man in the Howard plant, from the president to the shipping clerk, believes in SERVICE—believes that the customer comes first and must be pleased. If any dissatisfaction with Howard Products ever occurs, we want to know about it and consider it a privilege to rectify any dissatisfaction, no matter how trivial.

Remember, when you specify Howard Products you are getting the utmost in quality without increased costs, and that "Your Satisfaction" is the basis of every sale. Any order, large or small, addressed to either our representatives or to us direct, will receive quick and careful attention.

For the convenience of our Southern trade, we have established at 167-169 So. Forsyth St., Atlanta, Ga., a branch for rewinding lickerins and recovering flats, from which point very prompt service is given. Also other items are carried in stock for immediate deliveries.

HOWARD PRODUCTS

Card Clothing
Napper Clothing
Wire Heddles
Cylinder Fillets
Doffer Fillets
Hand Stripping Cards
Stripper Fillets
Burnisher Fillets
Emery Fillets
Strickles

HOWARD BROS. MFG. CO.

Worcester, Mass.

Southern Agent: E. M. Terryberry, 1126 Healey Bldg., Atlanta, Ga.
Asst. Sou. Agent: Guy L. Melchor, 121 So. Forsyth St., Atlanta, Ga.

HOW

Card Clothing?

1866

1900

1926

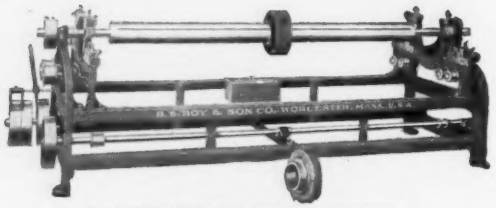
ARD

GRINDING MACHINERY SPECIALIZATION SINCE 1868

Experience

ROY TRAVERSE COTTON CARD GRINDER

ROY ROLLER COTTON CARD GRINDER



ROY IMPROVED NAPPER ROLL GRINDER

B. S. ROY & SON CO. MADE IN AMERICA TEXTILE GRINDING MACHINERY WORCESTER, MASS. U.S.A. SUPPLIED THE WORLD OVER

SINCE the early inventions of its founders, it has been the constant aim of B. S. Roy & Son Company to improve and perfect Textile Grinding Machinery. And as a result of this policy, which is sixty years old, the Roy Line of Textile Grinders has acquired the reputation of being the "best in the mills."

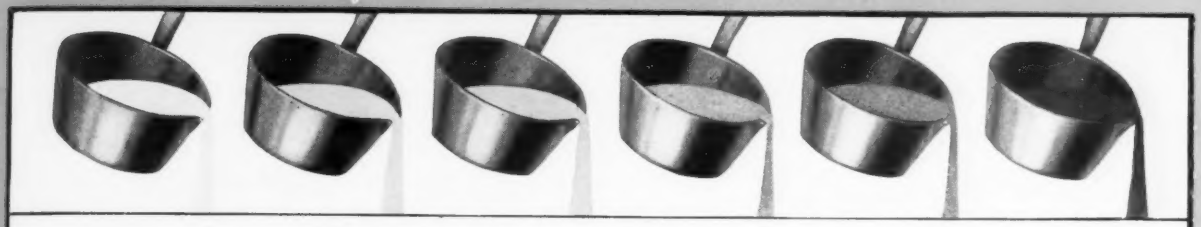
Experience proved that nothing but the most efficient design and highest grade materials even to the smallest detail should be used throughout the process of textile grinder manufacture—from raw materials on through business dealings and service—and it was by strict application to this principle that they are so extensively used.

Take the Improved Roy Traverse Cotton Card Grinder, for instance, and note the improvements; shells of the finest steel tubing, steel screws, hardened steel shafts. Grinding wheels with closed sides. Fitted with steel spring, dog, wipers and oilers. Roy style sleeve bearings at traverse ends. Driving pulley. Traversing wheels fitted for and covered with emery fillet. This description, typical of all Roy Grinders, is the reason why you find them so steady and positive in operation.

Write today for full information.

B. S. ROY & SON COMPANY *Established 1868* WORCESTER, MASS.
E. M. TERRYBERRY, Sou. Agt. Commercial Bank Bldg. Charlotte, N. C.

ROY TEXTILE GRINDERS



6 SHADES OR 66

Any color or any number of shades can be economically and safely dyed in the same Monel Metal tub

BELL PHONE, REGENT 8070

TEXTILE SILK DYE WORKS
3229 NORTH HANCOCK STREET
PHILADELPHIA, PA.

June 23rd, 1925.

The International Nickel Co.,
67 Wall Street,
New York City.

Gentlemen:-

We are pleased to advise you that the Monel Metal dye tubs manufactured for us by the Liberty Coppersmithing Company some years ago have given us complete satisfaction.

Not only have these tubs been found superior in durability, but the chemicals used in dyeing, such as strong alkali, create no ill effects either with regard to dulling the shades or causing deterioration in the metal itself.

One of the most important advantages is the fact that the Monel tubs are quickly and easily cleansed. It is entirely practicable and common practice to dye a light shade immediately following a dark color, with no loss of time whatever, and no expensive boiling out with live steam and alkali between lots.

Dye buckets, dippers, and stirring rods made from Monel Metal have been found equally pleasing.

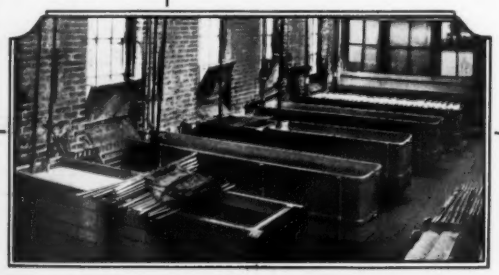
Yours very truly,

TEXTILE SILK DYE WORKS.

Edwin F. James

Mr. Edwin F. James is a recognized authority on the dyeing of Rayon. Your attention is invited to his article "Dyeing of Rayon in the Skein," which appeared in the September 26th issue of Textile World, "Rayon Supplement."

View of Textile Silk Dye Works, Philadelphia, showing Monel Metal equipment made and installed by THE LIBERTY COPPERSMITHING CO. OF PHILADELPHIA, PA.



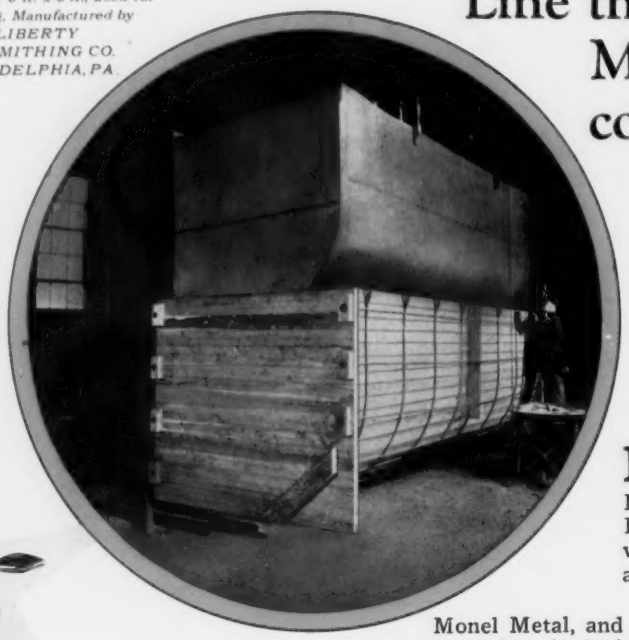
SEND FOR "LIST B" OF MONEL METAL & NICKEL LITERATURE

THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET NEW YORK CITY

INCo Monel metal

Where Wood Tanks Must Still Serve

Monel Metal lining for round-back tank, 16 ft. x 6 ft. x 6 ft., used for plush dyeing. Manufactured by THE LIBERTY COPPERSMITHING CO. OF PHILADELPHIA, PA.



Line them with Monel Metal to prevent color "*hang overs*" and lost production time

MILLS buying NEW dye-house equipment are installing all-Monel Metal machines. Of course! But what about the dye-house whose wooden tubs must still serve for awhile?

Your old tanks can be lined with Monel Metal, and the expense will be quickly repaid by savings in dyeing costs.

Monel Metal tub linings prevent spoilage of batches. They are easily cleaned without boiling. Yet any number of colors can be dyed in quick succession in the one Monel Metal tub.

Monel Metal also cuts costs because it lasts longer. Corrosion-resistant, and rust-proof, with steel-like strength, it has durability of a rare kind.

Monel Metal equipment of all kinds is popular among boss dyers and mill treasurers. Both appreciate its economy and convenience. Look into this question of Monel Metal linings and equipment. Consult your sheet metal worker or write direct for complete information.

For dye-house accessories—from pails to scoops—there's nothing so satisfactory as Monel Metal. Shown here are Monel Metal ladles, measure, pail, scale pan, scoop and transfer can—all made by THE LIBERTY COPPERSMITHING CO. OF PHILADELPHIA, PA.

SEND FOR "LIST B" OF MONEL METAL & NICKEL LITERATURE

THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET NEW YORK CITY

Monel Metal is a technically controlled Nickel-Copper alloy of high nickel content. It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company. The name "Monel Metal" is a registered trade mark.

INCo Monel metal

ALUMINUM PAINT

To Executives who are Proud of Their Mills

ALUMINUM PAINT on roofs, tanks, towers and fences will give your plant a crisp, clean appearance.

And Aluminum Paint protects surfaces longer and better because it "leafs", forming a smooth, continuous coat of pure *metallic* aluminum.

This extra protection and added beauty costs no more. A gallon of Aluminum Paint covers 500-700 square feet. And Aluminum Paint is more durable.

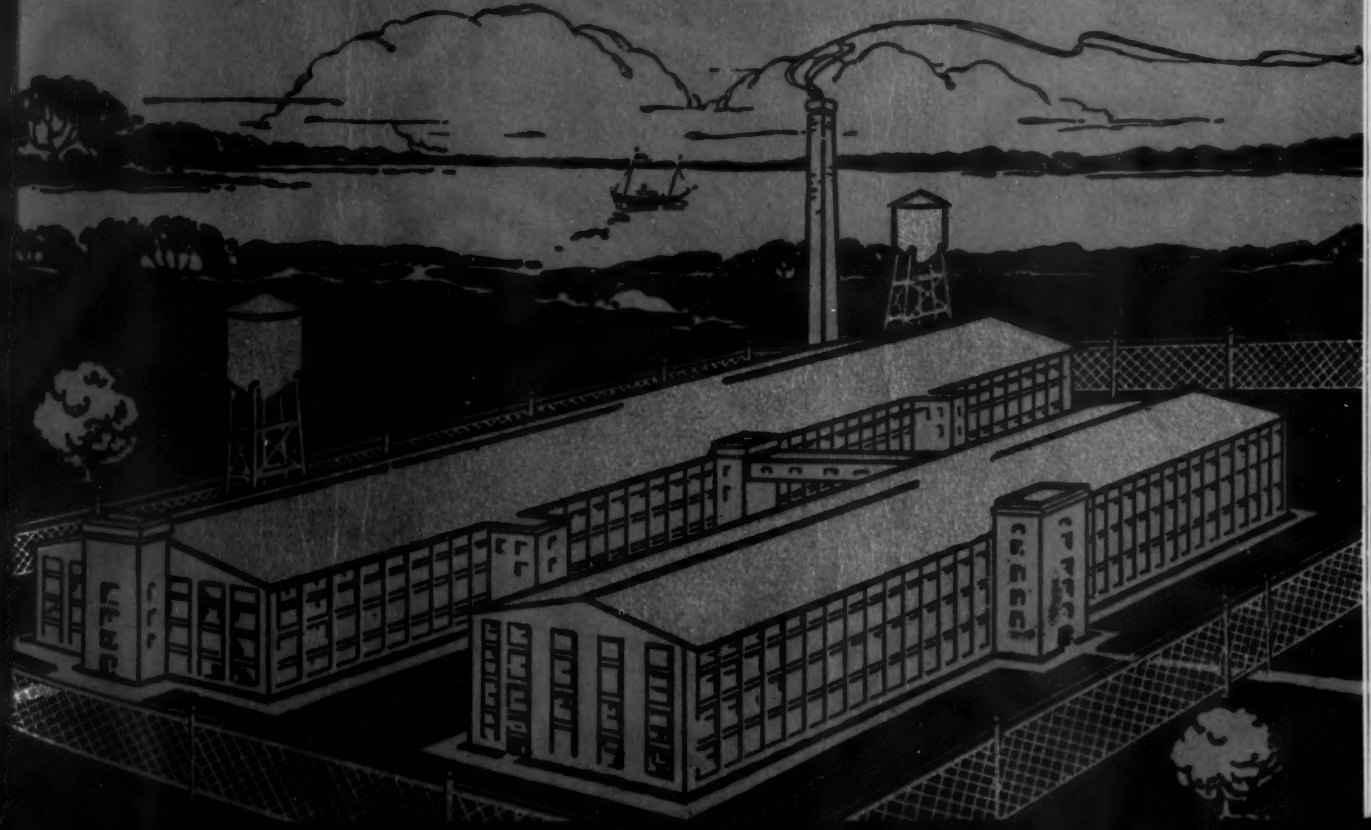
An illustrated booklet—"Aluminum Paint"—tells how to improve the appearance and lower maintenance costs in textile mills.

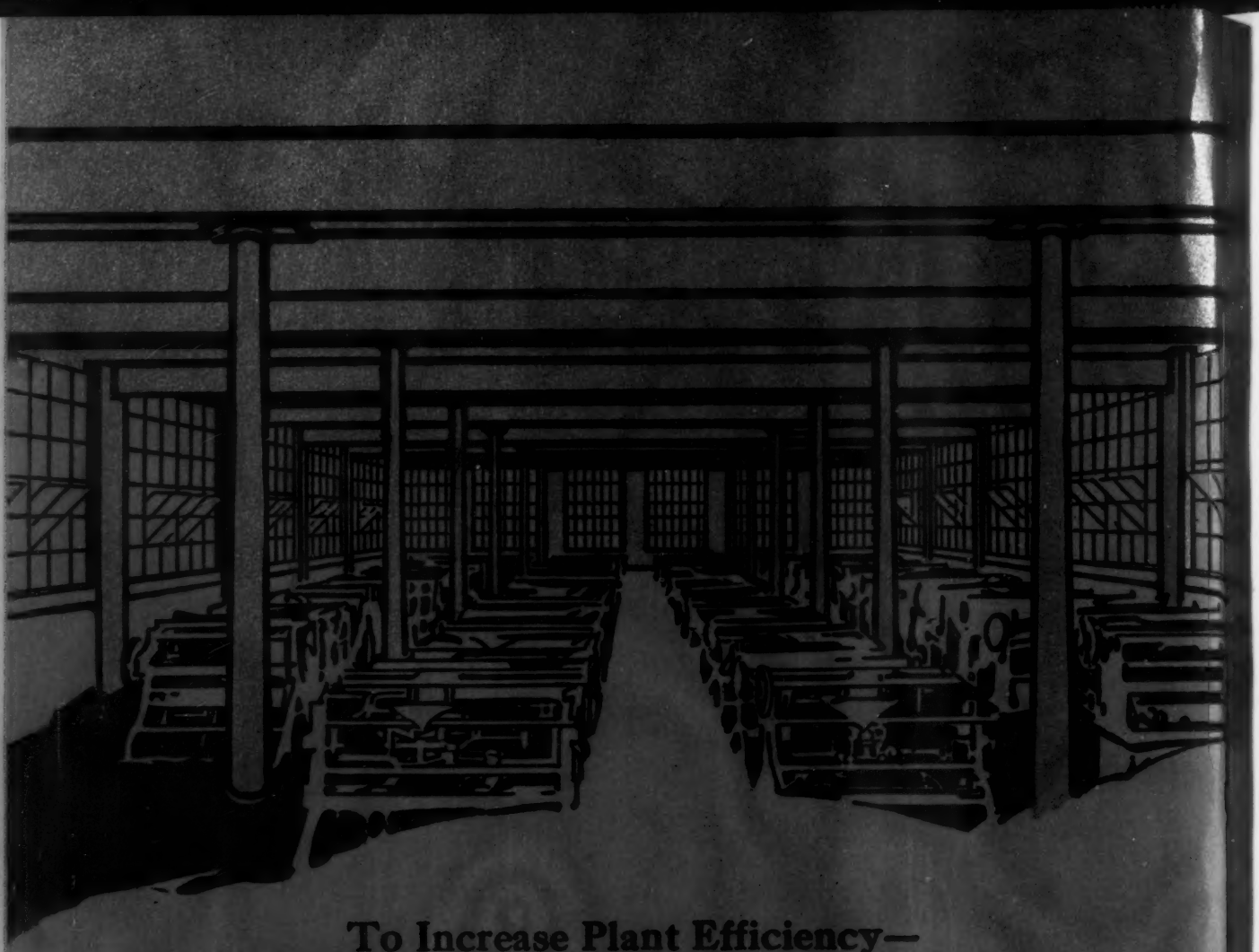
Write for your copy today.

Aluminum Company of America
2401 Oliver Building · Pittsburgh, Pa.

Offices in Seventeen Principal American Cities

ALUMINUM IN EVERY COMMERCIAL FORM





To Increase Plant Efficiency—

PAINT the interior walls of your buildings with Aluminum Paint. Its soft, silver-gray sheen gives plenty of light without fatiguing glare.

The reflective efficiency of Aluminum Paint lasts. Even gas and acid fumes have little effect upon Aluminum Painted walls.

Notwithstanding these special advantages, Aluminum Paint costs no more than other first-class paints. Aluminum Paint is economical—it goes far. A gallon covers 500-700 square feet.

A single coat of Aluminum Paint completely blanks out the original wall color.

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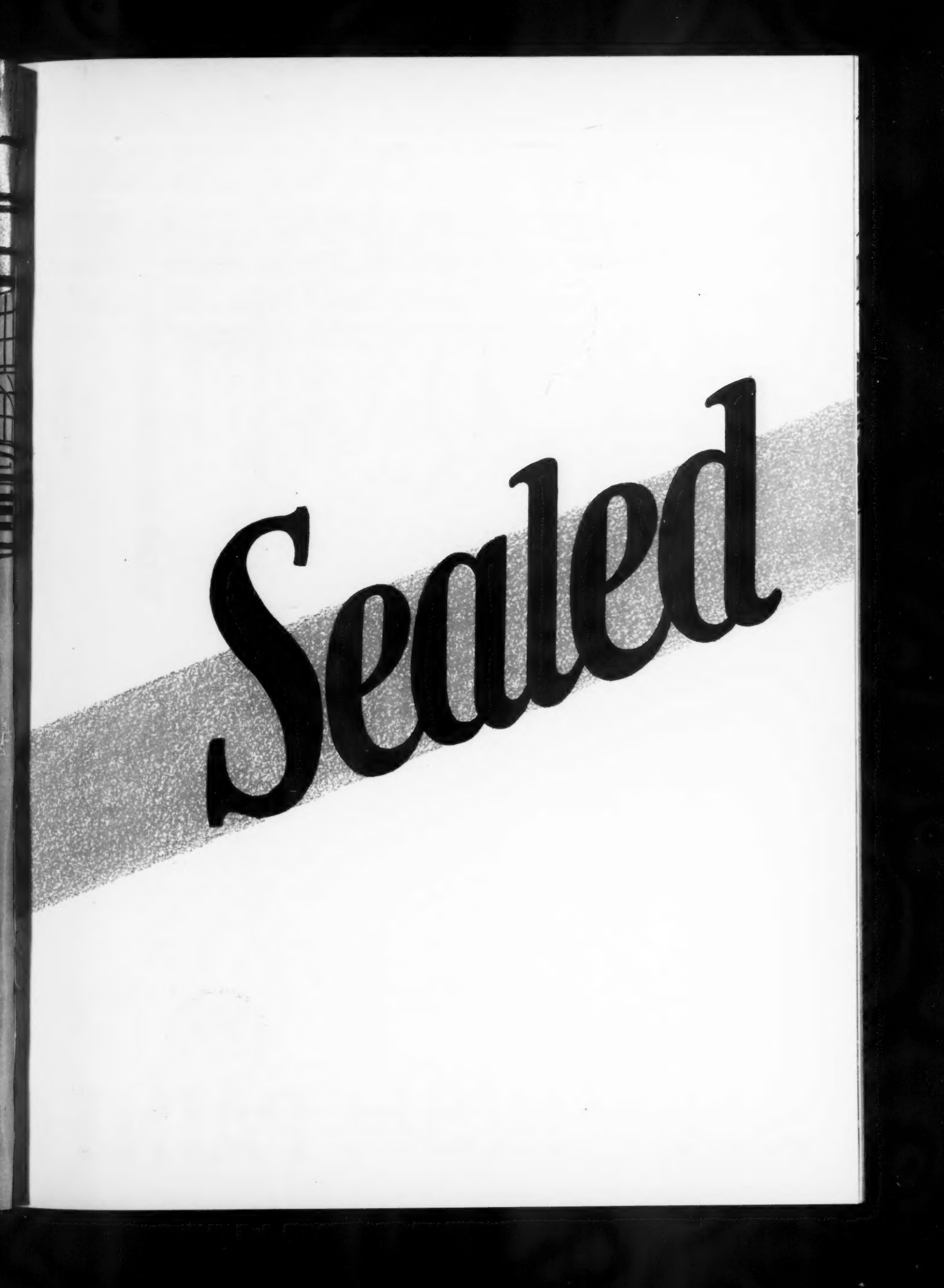
Aluminum Company of America

2401 Oliver Building · Pittsburgh, Pa.

Offices in Seventeen Principal American Cities

ALUMINUM IN EVERY COMMERCIAL FORM

ALUMINUM PAINT


Sealed

Sealed Sleeve Bearings

Now on Westinghouse Motors

PRACTICALLY every mechanical engineer knows the advantages of the sleeve bearing; how the larger bearing surface makes for longer life; how sleeve bearings utilize a film of oil for cushioning protection; and why sleeve bearings never cause unexpected shutdowns because of sudden breakdowns.

In Westinghouse *Sealed Sleeve* Bearings those advantages have been made doubly sure. An absolutely air tight housing keeps dust and grit *out* of the bearing and all oil *in* the bearing, thus eliminating the chief cause of insulation troubles. The oil cannot spread to the insulation.

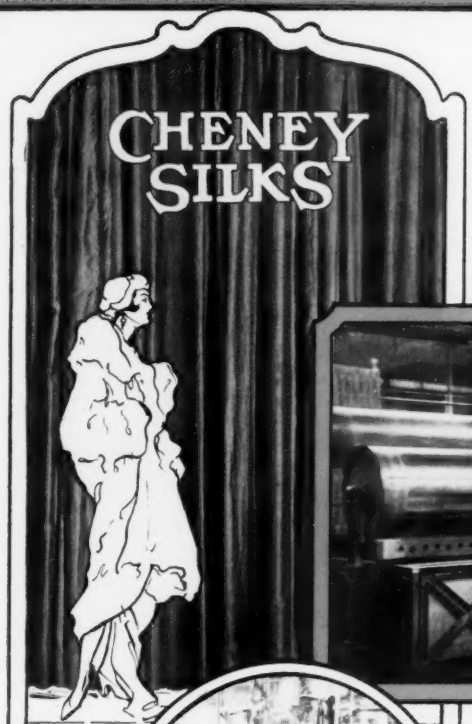
In developing this *Sealed Sleeve* Bearing Westinghouse has again demonstrated its capacity to perfect and apply principles of proved superiority.

Send for the "Evidence"

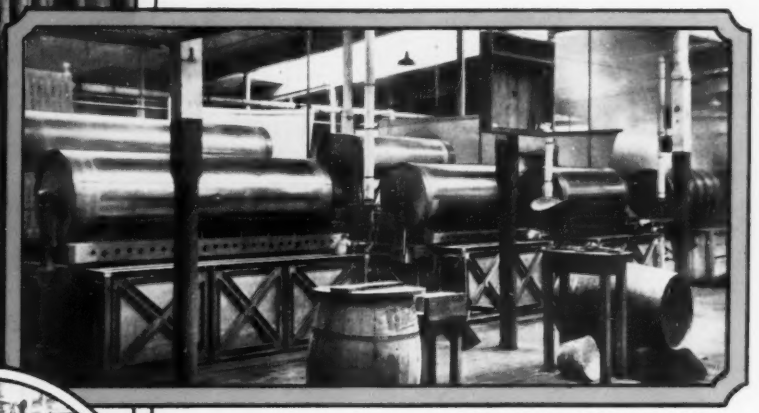
WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
EAST PITTSBURGH · PENNSYLVANIA
Sales Offices in all Principal Cities of the United States and Foreign Countries

Westinghouse

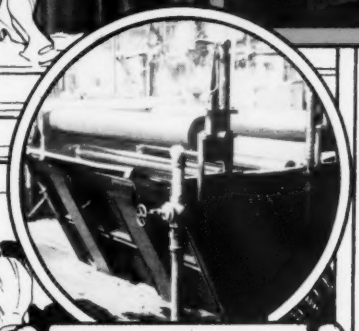
WESTINGHOUSE ELECTRIC



How CHENEY BROTHERS SECURE SUCH SUBTLE SHADES



Battery of Monel Metal piece dyeing machines, equipped with Monel Metal tanks and reels, in plant of Cheney Brothers, South Manchester, Conn.



Monel Metal dye jig at Cheney Brothers, South Manchester, Conn.

Monel Metal hand bark in Cheney Brothers dye-house.

Monel Metal dyeing equipment assures accurate shades and saves scouring time

THE texture and coloring of Cheney Silks are so notable for their quality that the world naturally wants to know — how do Cheney Brothers achieve such marvelous dyeing results?

Cheney Brothers will tell you that careful dyeing, expert research and the use of quality dyestuffs are reasons for the subtle shades of Cheney Silks.

It is significant however, that Monel Metal equipment is used extensively in the production of these rare color effects. For they realize that to maintain style leadership, fabrics must be accurately dyed and dyeing equipment must be completely cleaned between batches.

Monel Metal dyeing equipment, because it is so easily cleaned of old dye, permits the dyeing of many different colors in one machine. There's no "boiling-out" time—no wasted time—when you use Monel Metal equipment.

Monel Metal resists corrosion and it will not rust. It is tough and strong as steel—its smooth, hard surface will not catch or mar the sheerest silken fabrics. From every standpoint the use of Monel Metal is economical.

Let us give you more information as to how you too can benefit by using Monel Metal.

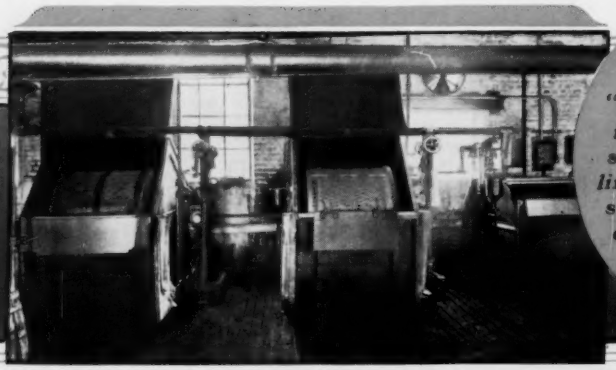
ASK FOR "LIST B" OF MONEL METAL & NICKEL LITERATURE

INCo

THE INTERNATIONAL NICKEL CO.
67 WALL STREET . . NEW YORK CITY

MOnel metal

After 33 years of Hosiery manufacture



View in dye house, Rollins Hosiery Mills, Des Moines, Iowa, showing battery of Monel Metal "Smith-Drum" hosiery dyeing machines made by SMITH, DRUM & CO. OF PHILADELPHIA.

ROLLINS HOSIERY MILLS Writes:—

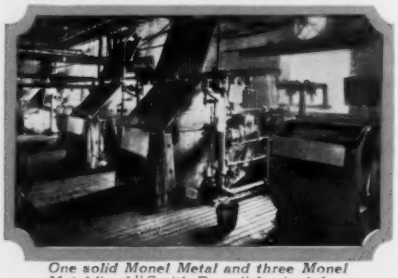
"—everything that comes in contact with any dye solution is Monel Metal lined. We are thoroughly sold on your product and do not use any other type of metal receptacle in our dye house."

ROLLINS RUNSTOP REG. U.S. PAT. OFF. 2-6-23

Monel Metal Dyeing Equipment Simplifies the Matching Problem

BEFORE light-colored hosiery became so popular, the hosiery dyeing problem was comparatively simple. But with the growing demand for the lighter shades, the need for Monel Metal dyeing equipment has grown acute.

Smith, Drum & Co., for many years have recommended Monel Metal dyeing machines to hosiery manufacturers because all colors and shades—however delicate—can be dyed in the one Monel Metal machine, without delays for "boiling out" and scouring. They are easily cleaned and thus prevent the costly waste that follows color "hang overs."



One solid Monel Metal and three Monel Metal-lined "Smith-Drum" hosiery dyeing machines at Rollins Hosiery Mills, Des Moines, Ia.

Monel Metal equipment is so universally accepted by boss dyers, that it has now become customary to use it for equipment other than dyeing machines. Monel Metal scoops, pails, dippers, ladles, etc., are now in general use. New Monel Metal linings are giving a new lease of life to old wood tanks.

Monel Metal's resistance to corrosion and its immunity to rust, combined with its steel-like strength make it the logical material for many different types of dye-house equipment.

Are you letting Monel Metal save for YOU? We suggest that you consult your equipment manufacturer, your sheet metal worker, or write direct to us. Discover for yourself how many ways there are to use Monel Metal—PROFITABLY.

SEND FOR "LIST B" OF MONEL METAL & NICKEL LITERATURE

THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET • NEW YORK CITY

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INCo

MOnel metal

ALUMINUM PAINT

To Executives who are Proud of Their Mills

ALUMINUM PAINT on roofs, tanks, towers and fences will give your plant a crisp, clean appearance.

And Aluminum Paint protects surfaces longer and better because it "leafs", forming a smooth, continuous coat of pure *metallic* aluminum.

This extra protection and added beauty costs no more. A gallon of Aluminum Paint covers 500-700 square feet. And Aluminum Paint is more durable.

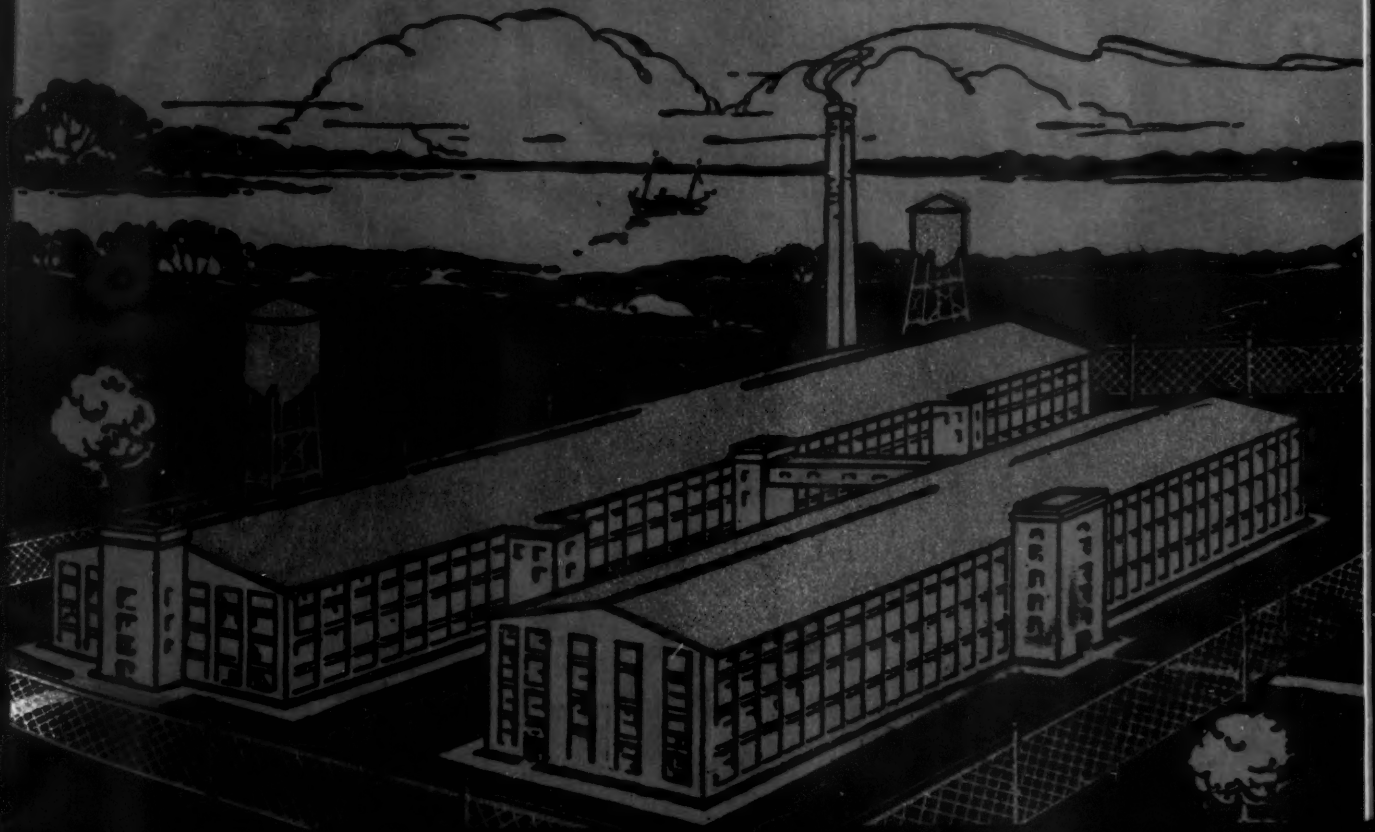
An illustrated booklet—"Aluminum Paint"—tells how to improve the appearance and lower maintenance costs in textile mills.

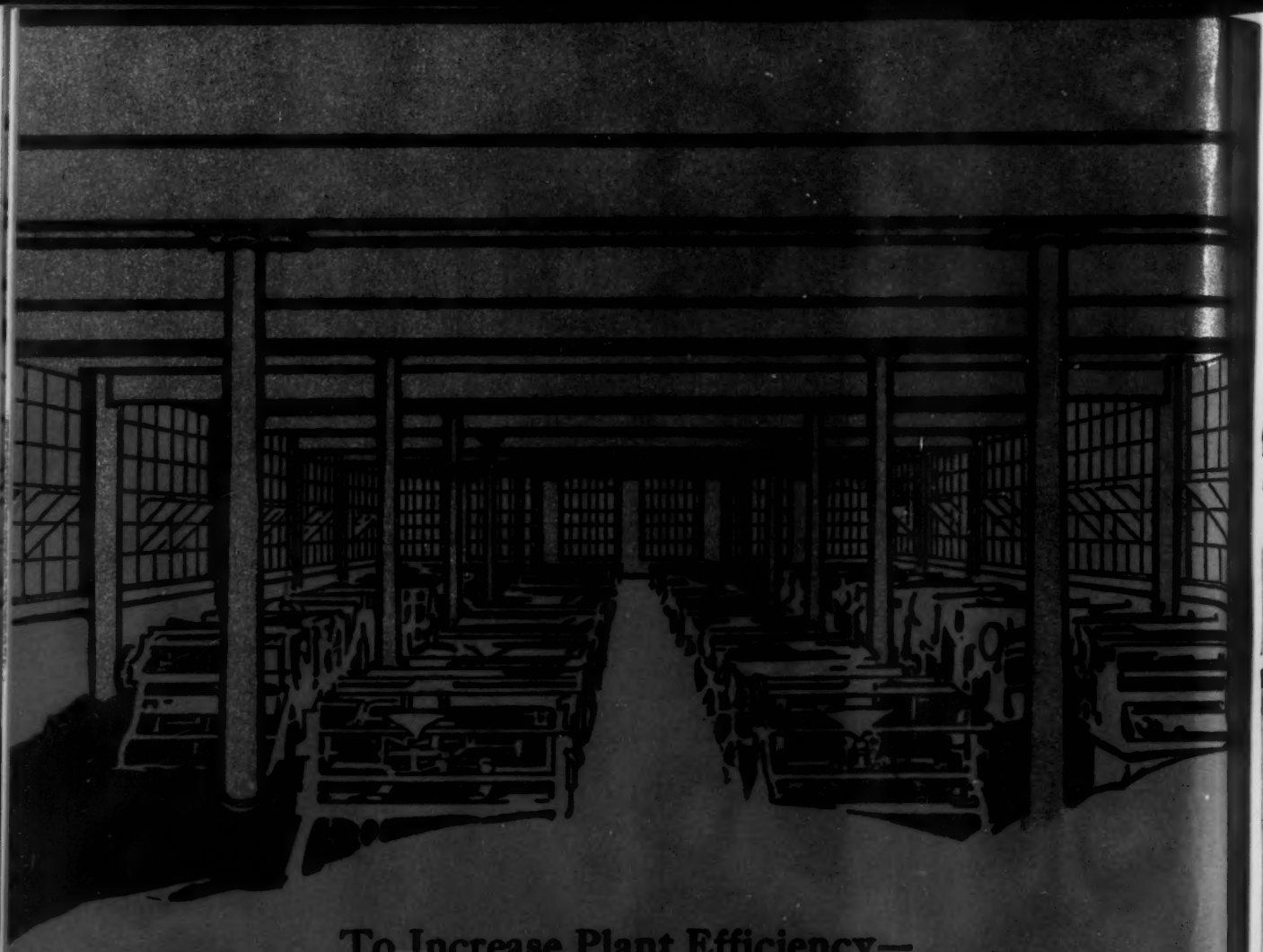
Write for your copy today.

Aluminum Company of America
2401 Oliver Building · Pittsburgh, Pa.

Offices in Seventeen Principal American Cities

ALUMINUM IN EVERY COMMERCIAL FORM





To Increase Plant Efficiency—

PAINT the interior walls of your buildings with Aluminum Paint. Its soft, silver-gray sheen gives plenty of light without fatiguing glare.

The reflective efficiency of Aluminum Paint lasts. Even gas and acid fumes have little effect upon Aluminum Painted walls.

Notwithstanding these special advantages, Aluminum Paint costs no more than other first-class paints. Aluminum Paint is economical—it goes far. A gallon covers 500-700 square feet.

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ALUMINUM IN EVERY COMMERCIAL FORM

ALUMINUM PAINT

Evaporators for Paper Mill

THESE evaporators consist of thirty No. 10 gauge steel discs, 7 feet 6 inches outside diameter, mounted on a forged steel shaft supported by three cast steel spiders. The discs are spaced apart by pipe spacers mounted on steel separator bolts directly fastened to spider arms. The complete evaporators weigh 12,100 lbs. each.

DODGE

POWER TRANSMITTING – ELEVATING – CONVEYING & SPECIAL MACHINERY

POUNDS OR TONS

Building the Specific Job *for Industry*

THESE five evaporators are typical of the special equipment built to specifications in Dodge foundries and machine shops. A far cry from the tiny motor pulley—but not for Dodge. It illustrates the completeness of the service Dodge offers to industry. Forty years' experience in helping industry lower its production costs has given Dodge engineers a broad and extensive knowledge of industrial requirements which is applicable to special equipment as well as to power transmitting or materials handling problems.

The extent of its foundry and machine shop facilities enables Dodge to meet the demand for pounds or tons.

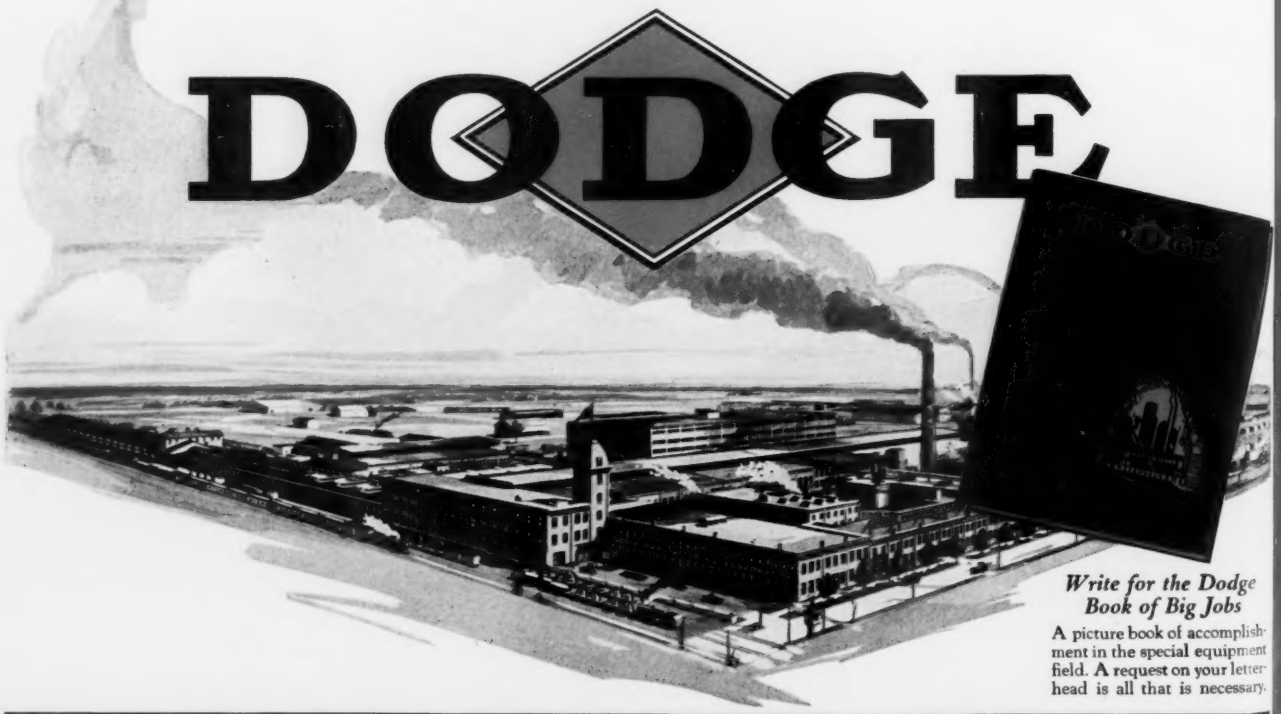
Elevating, conveying or special machinery—these are as much a part of the Dodge line as pulleys, hangers, bearings, etc. In fact, Dodge has become the *world's marketplace for industrial equipment—the source of supply of all industry.*

Fourteen factory branches and 500 machinery supply dealers bring Dodge service to your door. Send all your specifications to Dodge.

DODGE MANUFACTURING CORPORATION
MISHAWAKA, INDIANA

Branches: Boston New York Newark Oneida Philadelphia Pittsburgh Cincinnati Chicago St. Louis Minneapolis Seattle San Francisco Houston Atlanta

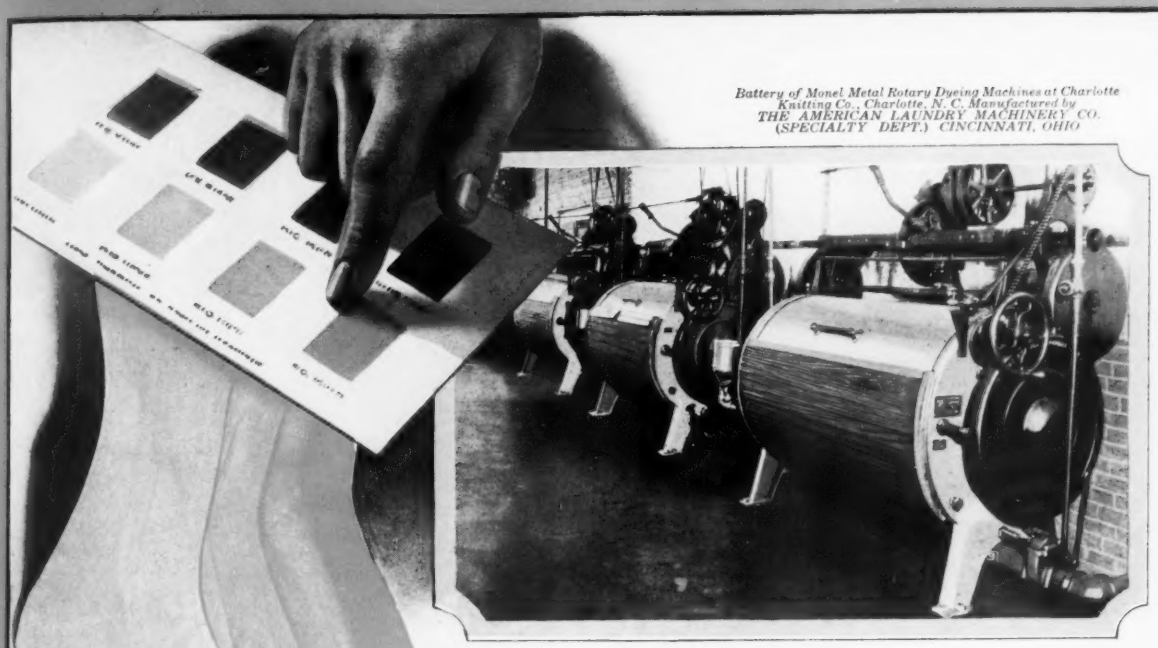
DODGE



Write for the Dodge Book of Big Jobs

A picture book of accomplishment in the special equipment field. A request on your letterhead is all that is necessary.

DODGE CAN MAKE IT



Battery of Monel Metal Rotary Dyeing Machines at Charlotte Knitting Co., Charlotte, N. C. Manufactured by THE AMERICAN LAUNDRY MACHINERY CO. (SPECIALTY DEPT.) CINCINNATI, OHIO

FOR the exact color, at low cost, *specify Monel Metal for dyeing equipment*

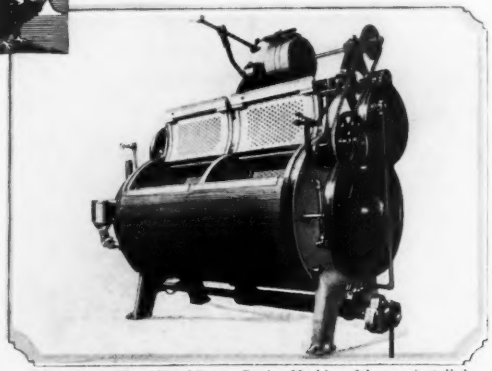
THE boss dyer in the small hosiery mill must be as watchful of costs and quality as the dye house superintendent in the million-dollar plant. In these days of delicate shades for hosiery, the problem of obtaining correct colors, at no greater manufacturing cost, is a vexing question to every mill that is not Monel Metal equipped.

Here at the Charlotte Knitting Co., three Monel Metal machines handle hose of mercerized cotton, pure silk, artificial silk—and combinations of the three. With just a short boil-out between batches, these machines shift from one color to another, with no losses due to color "hangovers."

The unique combination of properties embodied in Monel Metal is responsible for such profitable operation. Corrosion-resistance, rust-immunity and steel-like strength—all in one metal—provide a dyeing equipment material which has no equal.

Many other items of dye house equipment—tubs, ladles, dippers, scoops, pails, etc.—these are now available in Monel Metal. Ask your sheet metal worker!

Dig into this question of better profits from better equipment. Get the facts. *Write today.*



"American" Monel Metal Rotary Dyeing Machine of the type installed at Charlotte Knitting Co., by THE AMERICAN LAUNDRY MACHINERY CO. (SPECIALTY DEPT.) CINCINNATI, OHIO

ASK FOR BULLETIN, "HOSIERY AND KNIT GOODS EQUIPMENT"

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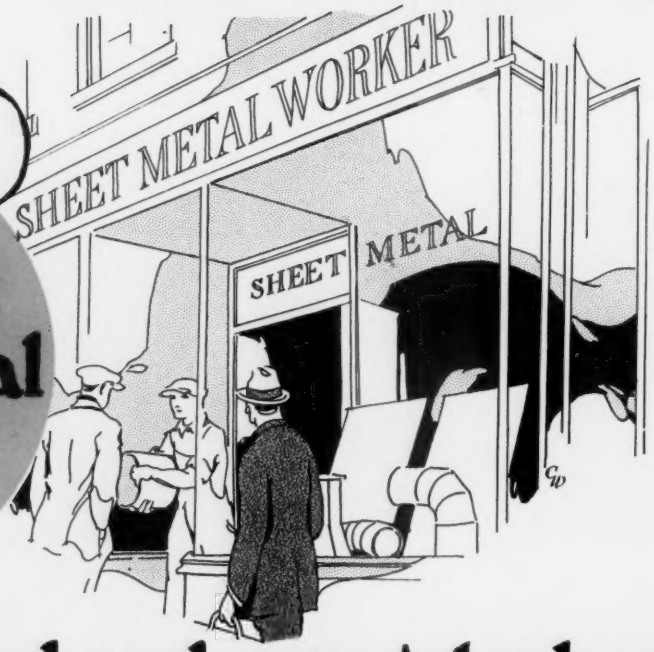
THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET **NEW YORK CITY**

INCo

Monel metal

for that sheet metal job



Use Monel Metal and your telephone

A TELEPHONE CALL to your sheet metal worker will help to settle the question of how you can best secure a permanent lining for a dye tub or a roof for the dye house. He will also supply you with Monel Metal ladles, dippers and scoops that will last through years of dye house use.

For your sheet metal worker knows what metal such jobs require. He knows, too, that Monel Metal is ideal for such uses.

He knows that Monel Metal:

—resists the corrosive attacks of dye house chemicals

—won't rust

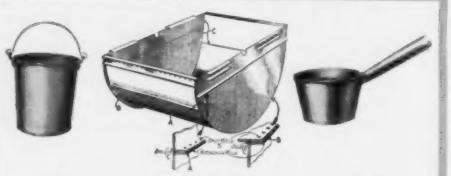
—has steel-like strength that assures years of service

—is easily kept clean

—has a smooth surface that is harmless to fine fabrics.

Monel Metal is available in the form of sheets, rods, wire, strip, etc., and can be fabricated into any desired form. It can be drawn, welded, machined, forged and cast.

Monel Metal is suitable for such a wide variety of dye house uses that there is not space to list them all. Below we have mentioned a few of the common uses in the textile industry—many of which you will recognize as fitting in with your immediate needs.



Some typical dye house uses of MONEL METAL

Dye tub linings	Exhaust ducts	Ventilators
Bleaching Kier linings	Flashings	Instruments
Dye house trucks	Sky light	Dye-sticks
Scoops	Shelving	Paddles
Pails	Hoods	Beams
Dippers	Strainers	Tie rods
Ladles	Roofs	Spiders
Filter cloth	Gutters	Nuts and Bolts
	Splash plates	

Get in touch with your sheet metal worker now and let him tell you how inexpensive—in the long run—it will be to use Monel Metal where you need it most. Or let us send you booklets and folders which will give you full information about this all-around metal.

SEND FOR "LIST B" OF MONEL METAL & NICKEL LITERATURE

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THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET NEW YORK CITY

INCo Monel metal

The Mill Wall Paint that Pays a Profit

PAINT your mill walls and ceilings with Aluminum Paint.

A flood of light spreads over your rooms. Increased light brings increased production that pays for the paint job and yields you a profit.

Upkeep costs are lower, too, when you paint mill walls and ceilings with Aluminum Paint. It costs no more than ordinary paints, yet a gallon goes farther, covering 500 to 700 square feet of smooth surface.

One coat of Aluminum Paint completes the interior job. Its opaque metallic coat entirely hides the original wall-color. This fact alone represents a great saving in labor and material costs.

Aluminum Paint's reflectivity lasts longer. The polished aluminum coat does not tarnish. Even dyehouse fumes have little effect upon its luster.

Aluminum Painted walls and ceilings may be washed free of dirt and dust without harming the paint surface.

These Aluminum Paint economies result from a new principle—"leafing."

The interesting story of "leafing" and Aluminum Paint's upkeep economies is told in our new illustrated booklet—"Aluminum Paint—A Step Ahead in Industrial Painting." Write for a copy today.

Aluminum Paint consists of Aluminum Bronze Powder mixed—two pounds to the gallon—with a suitable vehicle of oil or varnish.

Aluminum Company of America
2436 Oliver Building · Pittsburgh, Pa.

Offices in Seventeen Principal American Cities

ALUMINUM IN EVERY COMMERCIAL FORM

ALUMINUM

ALUMINUM PAINT

ALUMINUM PAINT

Aluminum Painted Roofs Beautify the Whole Mill

ALUMINUM PAINT affords complete surface protection because it shields with a *coat of metal.*

The silvery sheen of Aluminum Painted metal roofs enhances the appearance of the whole mill horizon.

Aluminum Painted roofs keep top-floor workrooms *cool.* The luster of the Paint reflects the sun's heat.

Coat-of-metal protection came into being with Aluminum Paint. A Paint which consists of flakes of pure metallic aluminum (Aluminum Bronze Powder) mixed—two pounds to the gallon—with a suitable vehicle of oil or varnish.

These flakes "leaf" together to form a continuous coat of metal—extra-durable, rustproof, waterproof and weatherproof.

Yet Aluminum Paint costs no more than ordinary paints.

Aluminum Paint brightens up the whole plant. Tanks, trim, fences and structural work look better and last longer when painted with Aluminum.

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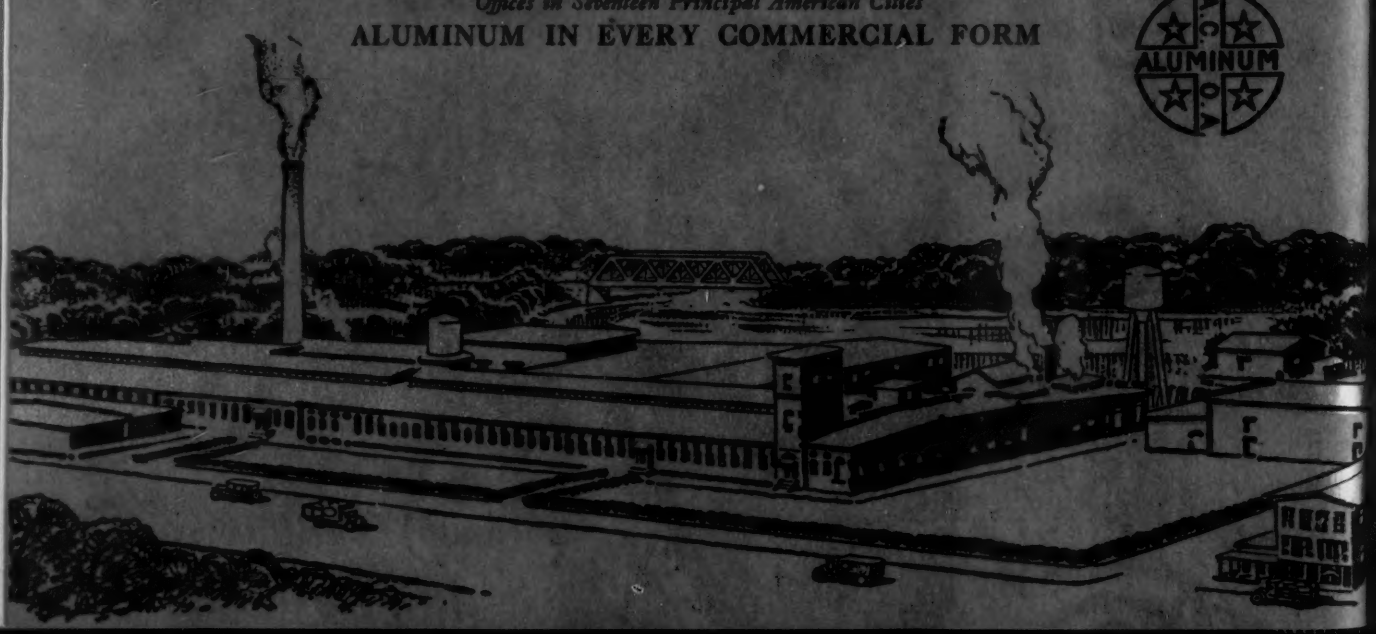

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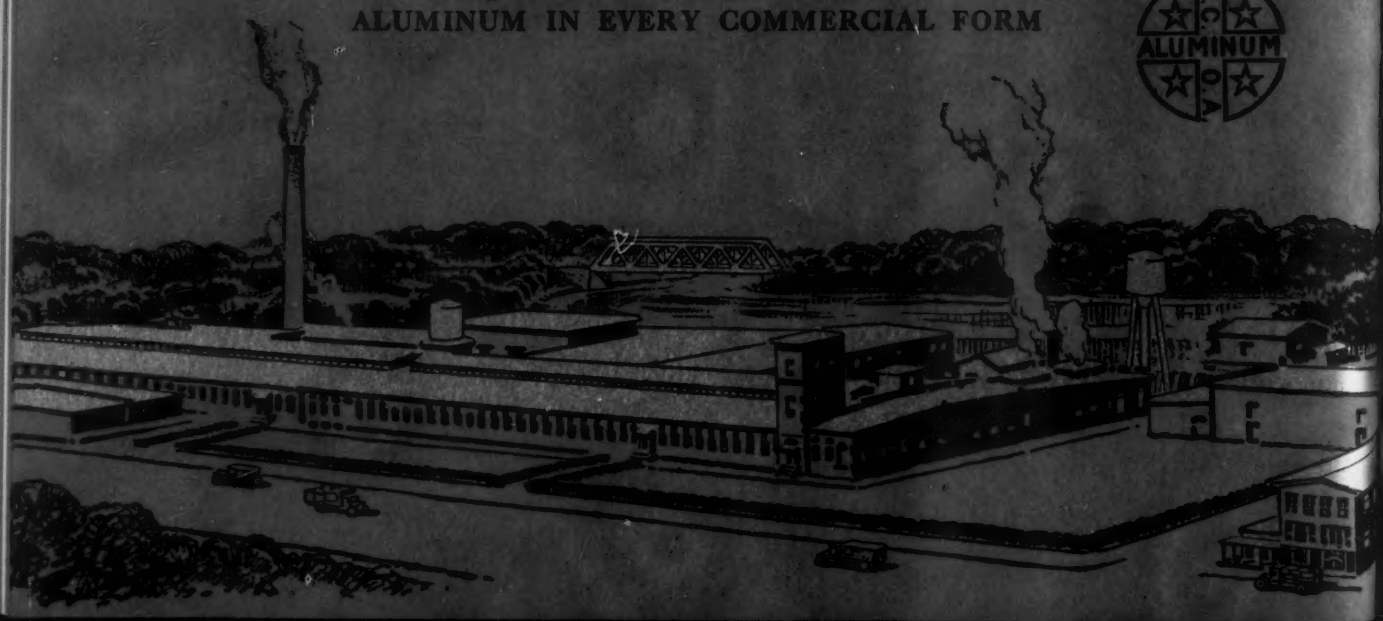


EXPORT REPRESENTATION

It is generally conceded by experts who have given the matter serious consideration that the salvation of the Cotton Textile Industry lies in

GREATER EXPORT DISTRIBUTION

and this fact is every day becoming more apparent to producers.

NEUSS, HESSLEIN & Co., Inc.

with an unequalled experience covering sixty years, are the

LARGEST EXPORTERS OF COTTON PIECE GOODS

with branch offices in all the principal foreign markets.

We will be glad to give your problems individual attention.

HESSLEIN & CO., Inc.

DRY GOODS COMMISSION AGENTS

77 WORTH STREET

NEW YORK, N. Y.

Conn Instruments for Successful Bands

We Congratulate the Mill Bands of South Carolina

THE recent successful convention at Spartanburg in which fifteen bands took part gave striking evidence of the value of the band in the mill. From every standpoint these bands deserve congratulation for their attainments.

We at C. G. Conn, Ltd., take pardonable pride in the fact that the majority of these bands are equipped with our instruments. Their showing was a further demonstration of the fact that Conn instruments play an important part in developing successful bands.

Their *musical quality* first of all, and their *easy-playing* features make Conns the logical choice for industrial bands, just as they are for the foremost professional bands and orchestras. With all their exclusive features Conns cost no more.

Complete equipment of new Conn instruments for a band can be obtained for only $5 per month per instrument. Our easy payment plan both on individual instruments and complete sets make it possible to have a band wherever there is one interested person to start.

Send the coupon for details of free trial offer on any Conn instrument; check if interested in organizing a band or orchestra. No obligation is involved.

C. G. Conn, Ltd., 1015 Conn Bldg., Elkhart, Ind.
Gentlemen: Please send free literature and details of trial offer on

_____
(Instrument)

Name _____

St. or R.F.D. _____

City _____

State _____

Am interested in organizing ( ) band ( ) orchestra.

CONN
BAND INSTRUMENTS
WORLD'S LARGEST MANUFACTURERS

Silk Throwsters, Weavers, Knitters, and Hosiery Manufacturers

use

PHILADELPHIA
PREPARED NEATS FOOT
SILK OIL
TRADE MARK
MANUFACTURED BY
Philadelphia Silk Oil Co.
PHILADELPHIA, PA.
COPYRIGHT 1917 BY LOOS & DILLWORTH

PHILADELPHIA SILK OIL

Because it is the only oil for the treatment of silk that is absolutely uniform.

We have made only this one oil and one grade of it for the treatment of silk for many years, and every drum will give the same good results as every other drum.

Every drum of oil is tested before it leaves our plant and must come up to our specifications or it is rejected. A complete record of each drum is kept.

RAYON

You will reduce your winding cost thirty percent; get a better finish, and more even colors by processing your Rayon with

PHILADELPHIA SILK OIL.

Now is the opportune time to investigate.

We will ship you a sample drum strictly on approval f. o. b. cars your station.

OFFICE AND PLANT
Third and Dock Streets
Philadelphia, Pa.

PHILADELPHIA SILK OIL COMPANY

LOOS & DILWORTH, *Proprietors*

THIRD AND DOCK STREETS PHILADELPHIA, PA.

THE AVERAGE textile mill owner never knows that the culverts in his village are going bad until something happens! . . . Without the slightest warning, something happens to thousands of culverts every year in mill villages alone—because the owners are indifferent to the kind of culverts they use in drainage systems. "Any kind of culvert is good enough." Only too often it isn't! And so, there are troublesome holdups in traffic, frequent accidents, and expensive repairs to make, caused by bad culverts. A great price to pay for indifference!

IT IS hard to know in advance whether or not a culvert is bad. But you can know it is GOOD!

That is the sole reason for the Keystone emblem shown below—so you can look for it on every section of Keystone Galvanized Metal Culverts, knowing that they will give the best of service.

Keystone Culverts are good because they are made of Keystone Copper Steel, the original copper steel—better because it has been developed over years of time. Its every improvement has been the result of extended study and research.

This corrosion-defying alloy is made into culverts that are elastic, yielding to the terrific pressure of shifting soil and changing traffic loads without cracking. Expansion and contraction cannot damage them, and they are immune from the havoc wrought by freezes and freshets.

Absolute perfection of drainage in your mill village—for a maximum number of years—that is what Keystone Galvanized Metal Culverts give you. And that is worth investigating.

TRADE KEYSTONE COPPER STEEL MARK

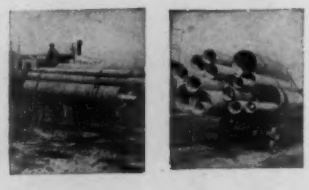
Keystone Culverts are easy to transport, handle, and install. And in every instance they outlast culverts of wood, vitrified sewer pipe—and even those of cement and concrete.

A universal recognition of quality—PROVED by time and service—has convinced buyers and users the country over of their excellence. Manufactured in multiples of two-foot sections in standard diameters and gauges. Quick deliveries assured.

Write for prices and booklet today.

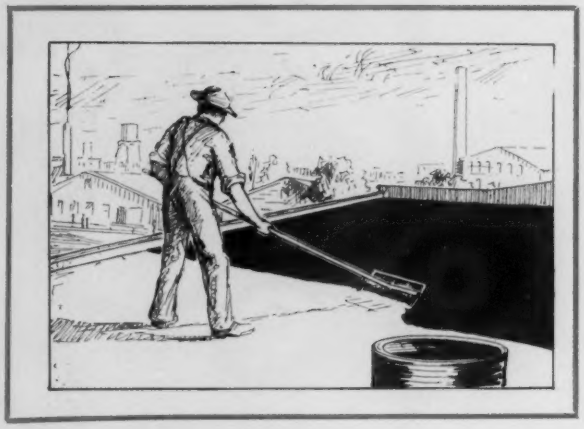
Carolina Metal Culvert Company

Salisbury,
North Carolina



Scenes showing the economy and ease of transporting Keystone Culverts

Reclaim Old Leaky Roofs



Permanently by a stroke of the brush!

AN OLD leaky roof is a great source of trouble, annoyance, and expense in the textile mill—often causing great damage to machinery and products. Working conditions are made extremely uncomfortable.

But a coating of Fiberoof No. 1 over the roof certainly gives results. Applied with a brush, the old roof is made absolutely water-tight, giving service for a long number of years without further repair. Working conditions are greatly improved and the production and efficiency of employees is substantially increased.

Fiberoof Asbestos Roofing Paint No. 1 is composed of pure Gilsonite and long fiber Canadian Asbestos, compounded with certain solvents to make it resist wear, weather, and water.

No matter how sieve-like the roof may be—whether it is metal, composition, tar paper or concrete, Fiberoof No. 1 will do the work. It positively cannot be ignited by sparks or embers. It will not smoulder.

The location of our plant means low freight rates to southern points, quicker deliveries, and better service. We will gladly advise you on any painting problems. Write today for booklet and prices.

FIBER MANUFACTURING COMPANY
Newton, N. C.

Other Fiberoof Products

FIBEROOF NO. 2
The same as Fiberoof No. 1 except for brilliance of color.

F M C SPECIAL GILSONITE
Roofing and Metal Paint for use on hot or cold pipes, smokestacks, engines, boiler fronts, iron fences, tanks, standpipes, bridges, residential roofs, etc.

F M C BLACK ENAMEL (Quick Drying)
For painting or dipping castings. Largely used by foundries, machine shops, repair shops.

BRILLIANT GILSONITE
The master black roofing and metal paint.

WILL STAND THE TEST OF TIME

FIBEROOF

Asbestos Roofing Paint No. 1

Guaranteed to Save 50% of Your Feeler Waste

Where No Other Bunch Builder Is in Operation or 30% where Another Make of Bunch Builder Is Being Used

OVER 3,000 installations are now in operation in mills from Canada to Texas and giving excellent service.

Let us help you with your feeler waste problems.

Before Installation Holcombe Bunch Builder 50 yds. of waste.

After Installation Holcombe Bunch Builder 3 to 10 yds. of waste.

THE Holcombe Automatic Bunch Builder does not require the attention of an operator. It is fool-proof and entirely automatic in operation, having no working parts that require oiling or replacing. Once installed, it requires no further attention.

The Builder is designed with special types for each of the following spinning frames—Fales & Jenks, Mason, Whitin, Lowell, Saco-Lowell, Saco-Pettee, and Howard & Bullough. In requesting further information it is necessary to advise the make and model of your frames.

Thirty days operation allowed. If they are not entirely satisfactory they may be returned, with no obligation on the part of the mill.

Holcombe Textile Equipment Company, Inc.
P. O. Box 130, Birmingham, Ala.
New England Representatives:
Lowell Spindle & Flyer Co., P.O. Box 625 Fall River, Mass.

HOLCOMBE
Automatic Bunch Builder

ALUMINUM PAINT

Facts About Industry's Greatest Protective Medium

INDUSTRY recognizes the Aluminum Bronze Powder produced and sold by the Aluminum Company of America, as the standard of purity and excellence for Aluminum Paint pigment.

Aluminum Paint in its most effective form consists solely of this pure Aluminum Bronze Powder mixed with a tested vehicle of oil or varnish.

When it is applied, the tiny flat flakes of Aluminum pigment "leaf" or lap, one over the other, forming a rust proof, weatherproof film of metal.

It is this "coat of metal" surface that gives Aluminum Paint its wonderful priming qualities when used on wood. That gives it longer life. Keeps it bright and clean and renders it so resistant to fumes and smoke.

Aluminum Paint is the ideal protective coating for practically all materials.

It may be brushed or sprayed on iron, steel, wood, brick or concrete.

ALUMINUM COMPANY *of* AMERICA

2436 Oliver Building, Pittsburgh, Pa.

Offices in Eighteen Principal American Cities

ALUMINUM IN EVERY COMMERCIAL FORM

ALUMINUM PAINT

Brighten Your Mill Rooms with ALUMINUM PAINT

It takes but one coat

Cloth Room of the Enterprise Mfg. Co., Augusta, Ga.

CONSIDERED simply from the standpoint of *economy*—aside from its other advantages—Aluminum Paint is the common-sense choice for mill interiors.

It takes but one coat of Aluminum Paint to do the job—its opaque metallic pigment entirely obscures any underlying color—even black. Yet it costs no more than *ordinary* paint and a gallon goes further—covering from 500 to 700 sq. feet of smooth surface.

Now note, also, these other savings it accomplishes. Aluminum Paint *lasts longer.* Its polished surface does not tarnish. Even fumes and smoke have little effect upon its luster. It may be washed free from dust and dirt without injury.

Add to this the soft, well diffused light reflected from silver-gray walls and ceilings and you find that Aluminum Paint contributes still another economy—improved working conditions with their stimulating effect upon production.

The complete story of Aluminum Paint's economies is told in our illustrated booklet—"Aluminum Paint—A Step Ahead in Industrial Painting." Write for a copy today.

ALUMINUM COMPANY *of* AMERICA

2401 Oliver Building, Pittsburgh, Pa.

Offices in Eighteen Principal American Cities

ALUMINUM IN EVERY COMMERCIAL FORM

Facts you should know about Celanese brand yarn

{1}

Celanese brand yarn is absolutely regular—and always so

There are no B or C grades

{2}

It has exceedingly great elasticity and elongation—when wet as well as when dry

Accounting in part for its remarkable strength and wearing quality

{3}

It is not affected by perspiration, by uric acid, by sea-water

Absorbs only 3% to 4% moisture

{4}

It is an excellent insulator of heat and cold

For all seasons, all climates

{5}

It is the only yarn that lets through the sun's health-giving ultraviolet rays

Imparting therapeutic qualities of the greatest value

{6}

It requires its own special SRA dyes, which are unusually fast

Far above commercial needs

{7}

Fabrics made of it can be washed indefinitely without injury

Washing actually improves them

{CONTINUED ON FOLLOWING PAGE}

Facts you should know about Celanese brand yarn

{CONTINUED FROM PRECEDING PAGE}

{8}

They require no special handling in the wet state

And they dry quickly

{9}

Celanese brand yarn goes through the machines for hours without a break

It increases loom production

{10}

It is delivered on 5″, 6″, or 7″ cops; in skeins; on cones; sized in skeins; dyed in skeins; or as sized warps, either on clients' beams or on our own paper shells

Deniers 45 to 300 and upward

{11}

It has many other important advantages

Freedom from shiners, etc.

{12}

The services of our weaving, knitting, dyeing and sizing experts are at your free disposal

Now—and at all times

Celanese brand yarn is neither silk nor rayon. It is highly elastic and remarkably durable; and it has unique hygienic qualities. Dyed with its special SRA dyes, it is fast to sun, suds, salt-water and perspiration.

CELANESE

REG. U.S. PAT. OFF.
BRAND YARNS

The AMERICAN CELLULOSE & CHEMICAL MANUFACTURING COMPANY, *Ltd*

15 EAST 26TH STREET, NEW YORK

WORKS AT AMCELLE (NEAR CUMBERLAND) MARYLAND

CELANESE is the registered trademark, in the United States, of the American Cellulose & Chemical Manufacturing Company, Ltd., to designate its brand of yarns, fabrics, garments, etc.

The Necessary Feeler For Weaving Rayon

The usual form of Filling Feeler engages the yarn on the bobbin at every second pick—always at the same place.

The constant hammering of the Feeler upon rayon or silk filling, and upon some fine cottons, results in serious damage to the yarn and bad places in the cloth.

Our new Intermittent Feeler comes in contact with the yarn on the bobbin only once in every 64 picks until one of those contacts shows that the filling has been woven off to the point where steady operation of the Feeler is necessary until the transfer is made.

The Intermittent Feeler does not bruise, chafe or cut the filling, nor mar the lustre of silk or rayon.

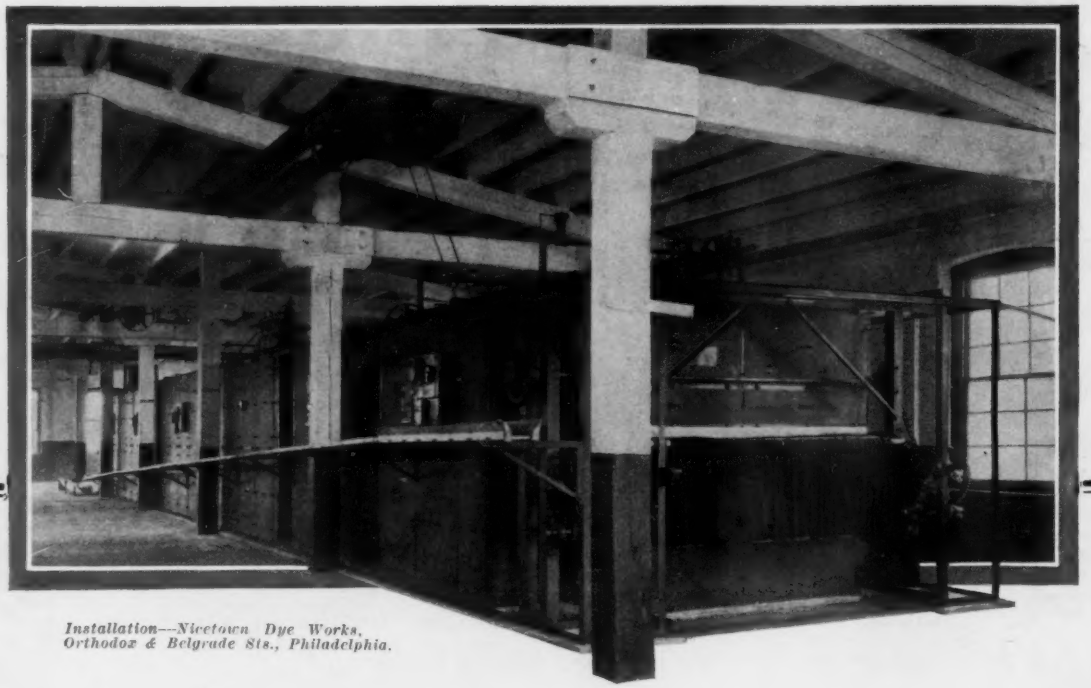
It is a necessity for the successful weaving of rayon.

If you are interested in saving your fine yarns and making better cloth, **Let's Talk It Over.**

DRAPER CORPORATION

Southern Office Atlanta Georgia — **Hopedale Massachusetts**

Copyright 1917 by Draper Corporation



Installation—Nicetown Dye Works, Orthodox & Belgrade Sts., Philadelphia.

When you buy a Dryer—

for any textile raw material or finished product, take the safe, short road that leads to lasting satisfaction and real economy—

You head straight for this road when you consult a reliable firm of dryer-builders—dryer-builders whose recommendations carry the weight of ripe experience—whose product has earned the reputation of doing all that is claimed for it—whose guarantee is their acceptance of full responsibility and your insurance of complete protection.

The careful check-up on experience, service of products and methods of dealing, proves the outstanding reliability of this organization of dryer specialists.

Added assurance is found in the fact that this Company's 40 years experience is the oldest in dryer-building, and Proctor Dryers greatly outnumber any other make in use today.

The Proctor Automatic Yarn Drying and Conditioning Machine, shown above, gives automatic control and handling in drying and conditioning skein yarns. The yarn comes from the machine uniformly penetrated with the necessary moisture to give the desired feel and quality for any requirement. This has struck a new high note of satisfaction and efficiency, drying skein yarns. Large savings make it profitable.

PROCTOR & SCHWARTZ, INC.

PHILADELPHIA

As the ship plowed up Chesapeake Bay

HE TELEPHONED

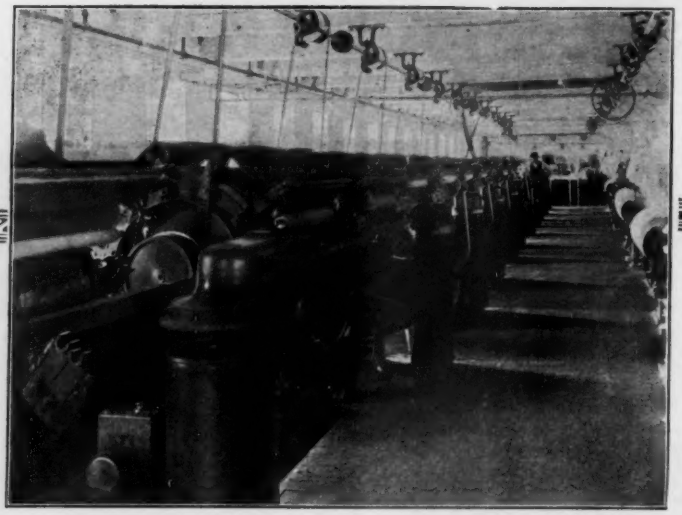
A HUSTLING Baltimore commission merchant received word that a ship-load of fruit consigned to him had passed Norfolk light on its way up Chesapeake Bay. This, to a commission merchant, was the signal for immediate action. By telephone over Long Distance to customers and prospects in West Virginia, Ohio, Pennsylvania and New York towns, he succeeded in selling the entire consignment of fruit before the vessel docked at Baltimore!

IN THOUSANDS of instances daily, the long distance telephone is used to make some buying or selling record that seems phenomenal. Is there a shipment of goods coming that should be disposed of? Have you raised or lowered prices? Is there some new product just ready for the market? Is there some man or concern in a distant state that should buy, or buy more, or pay what is owed? Turn to the long distance telephone for results.

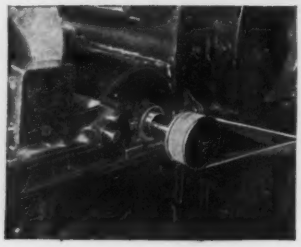
No transaction is too large or too important to be handled by telephone, and at a vast saving of time and expense. Most concerns in all lines of business could use Long Distance as they now use the local telephone. The rapid increase in long distance calls shows how many people are discovering that the telephone can serve them over states and over the nation as it formerly served them over counties.

Ask the Commercial Department of your local Bell company to investigate your business and show you new ways in which Long Distance can serve you. There is no charge for such a survey. In the meantime, what far-away buyer or executive do you want? Your telephone will get him, just as surely as it now gets the man in the next block. . . . . *Number, please?*

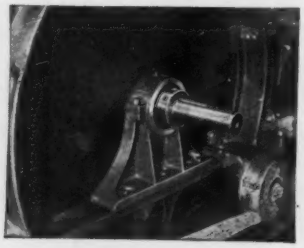
BELL LONG DISTANCE SERVICE



A group of Fafnir-equipped cards in the mill of the Georgia Mfg. Co., Whitehall, Ga. Four Fafnir Bearings are used on each machine.



Close-up of Fafnir ball bearing mounting for licker-in.



Close-up of Fafnir ball bearing main cylinder mounting.

TYPICAL APPLICATIONS OF FAFNIR BALL BEARINGS FOR TEXTILE MACHINERY

Picker: beater and fan shafts

Spinning frame: cylinder bearings

Card: licker-in, main cylinder

Slasher: large and small cylinders

Loom: crank shaft and loose pulley

Warper: measuring roll and cones

Twister: cylinder bearings

Cotton exhauster: fan shaft bearings

Hanger boxes, blower and fan boxes and other transmission equipment.

Fafnir giving the service these cards demand

Holding the close setting between licker-in and main cylinder to the correct fraction of an inch, keeping the cotton and the card fabric free from the damage of oil from leaky bearings, easy starting without calling for excessive power, — these are the textile engineer's requirements that bearings for cards must satisfy.

Impossible, to be sure, for the old fashioned variety of boxes. Yet easy for Fafnir Ball Bearings, as many mills such as the Georgia Mfg. Co. of Whitehall, Ga., know. This concern has forever banished the trouble formerly experienced with plain bearings by installing Fafnir on all carding machines.

Made with a long inner ring which provides an extra large seat, Fafnir Ball Bearings for cards support the shaft firmly and keep it in perfect alignment. A slip fit mounting is used, which avoids the complicated adjustments of the tapered adapter sleeve.

Changing plain bearings over to Fafnir is a simple and inexpensive procedure which it may pay you, also, to look into. Write for sizes, prices and our recommendations.

THE FAFNIR BEARING CO.

Makers of high grade ball bearings,—the most complete line of types and sizes in America.

NEW BRITAIN, CONN.

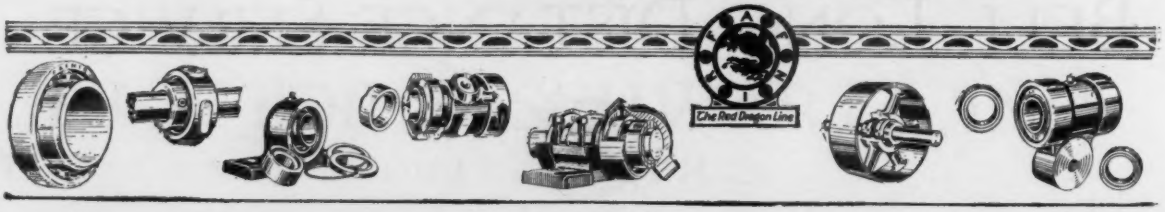
Southern Representatives:

W. S. Shirley,
120 Bourbon St., New Orleans, La.

A. G. Laughridge,
P. O. Box 1847, Atlanta, Ga.

FAFNIR

BALL BEARING
UNIT-ALIGNING
TRANSMISSION EQUIPMENT



Whitin Machine Works.

Whitinsville, Mass.
October 15, 1925

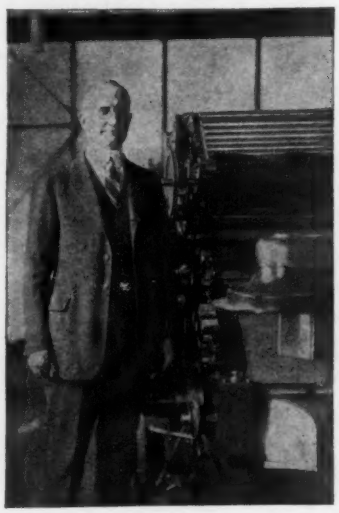
Dear Mr. Mill Man:

"1889". Thirty-six years ago Mr. John T. Wild signed up in the "Whitin" service.

He is considered one of the experts in this country on Cotton Drawing Frames and on Cards, (Revolving Top Flat and Full Roller for both staple and waste cotton, and wool). He is known in the North, South, West, and in Canada.

For these many years Mr. Wild has been one of the leading exponents of the service which we want to render our friends. Through his careful work and unflagging efforts, he has proven that the help which we have to offer to the trade has many times shown itself to be of real value to both our customers and to ourselves.

"Nothing ventured, nothing gained." We do not always succeed in answering questions sent to us, but we always try.

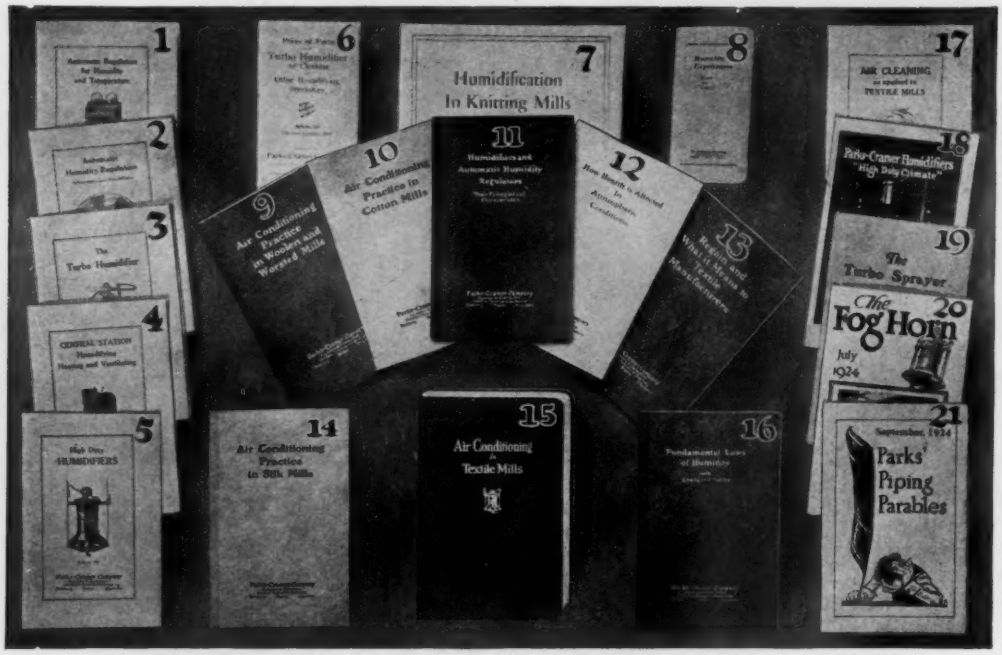


Mr. J. T. Wild

Yours sincerely,

WHITIN MACHINE WORKS

AT YOUR SERVICE!



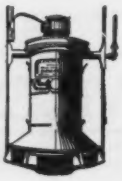
Oh! Look at all the stuff there is about Humidification

1. Automatic Regulators for Humidity and Temperature.
2. Automatic Humidity Regulation.
3. The Turbo Humidifier.
4. Central Station—Humidifying, Heating and Ventilating.
5. High Duty Humidifiers.
6. Prices of Parts of the Turbo Humidifier, Air Cleaning and other Humidifying Specialties.
7. Humidification in Knitting Mills.
8. Humidity Experiences (A record book for use in mills.)
9. Air Conditioning Practice in Woolen and Worsted Mills.
10. Air Conditioning Practice in Cotton Mills.
11. Humidifiers and Automatic Humidity Regulators, their Principles and Characteristics.
12. How Health is Affected by Atmospheric Conditions.
13. Regain and What it Means to Textile Manufacturers.
14. Air Conditioning Practice in Silk Mills.
15. Air Conditioning in Textile Mills. This is a 480 page hand book for engineers and students. We can't afford to send it free gratis for nothing. The price is $5.00 per copy, subject to a quantity discount.
16. Fundamental Laws of Humidity, with Charts and Tables.
17. Air Cleaning as applied to Textile Mills.
18. Parks-Cramer Humidifiers "High Duty Climate.
19. The Turbo Sprayer.
20. The Fog Horn.
21. Parks' Piping Parables.

If you are interested in ALL this business literature you are either a bear for reading —or a competitor. So don't ask for all of it. It would arouse our suspicions.

Draw a circle around the identifying numbers of those which interest you and send for them. Easiest way would be to tear this ad out and send it in.

Only—don't forget your name and address.

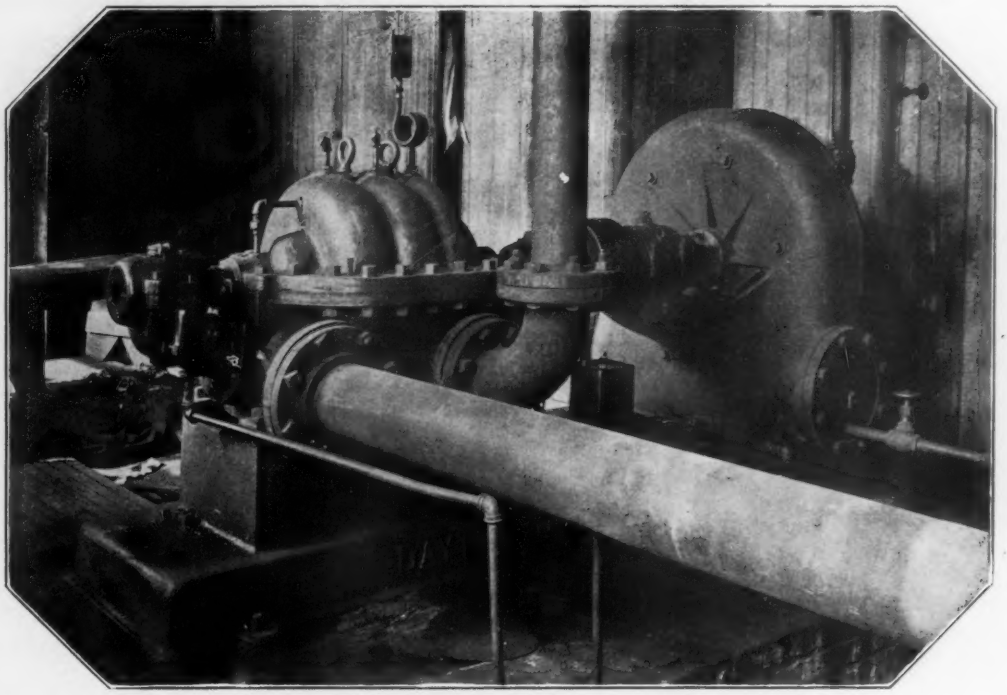


Parks-Cramer Company

Engineers & Contractors

Industrial Piping and Air Conditioning

Fitchburg Boston Charlotte



Utilize Exhaust Steam

Sturtevant Turbines are showing many cotton mills the way to greater steam economy. While it is generally known that these units are extremely economical in driving auxiliary equipment, cotton mills can effect greater savings by utilizing the exhaust steam from the turbines for process work. The turbine exhaust steam is absolutely clean and free from oil and power becomes a very inexpensive by-product.

Sturtevant Turbines are built to give lasting service. The bucket wheel is made from a solid steel forging with buckets milled into the rim. There are no notched edges or inserted buckets to allow distortion or cause weakness and loss of efficiency. The multiple nozzle design allows individual control of each nozzle.

Write for our catalogue No. 311.

ISAAC HARDEMAN

700 Realty Bldg. (Phone 2567) Charlotte, N. C.

Agent for

B. F. STURTEVANT COMPANY

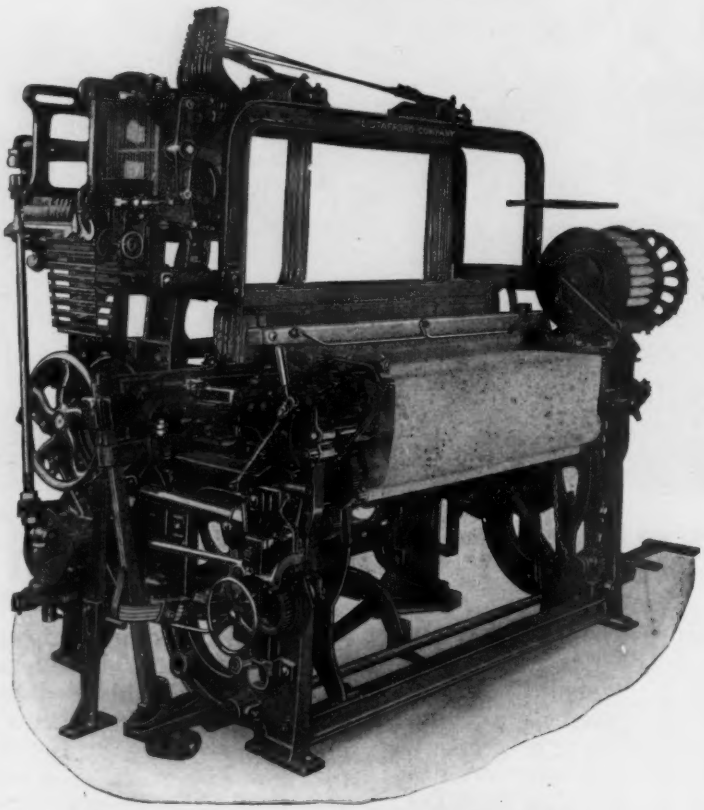
HYDE PARK :: BOSTON, MASS.

Sturtevant

PUTS AIR TO WORK

1488

STAFFORD
LOOMS



THERE is no better time than the present to make that investment in new looms.

Prepare now to take advantage of the good business that is to come.

Our facilities are at your disposal now and at all times.

THE STAFFORD COMPANY

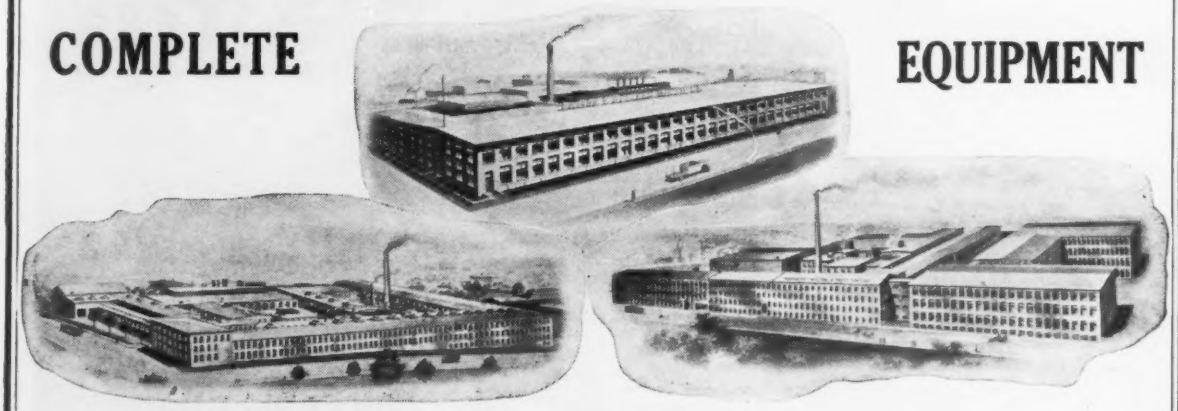
Weaving Machinery

READVILLE, MASS.

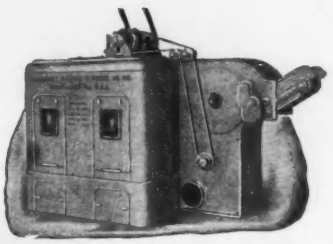
Southern Agent—Fred H. White, Charlotte, N. C.
Canadian Representatives—
Whitehead, Emmans, Ltd., Montreal, Canada.
Paterson Office—179 Ellison St., Paterson, N. J.

COTTON MACHINERY

COMPLETE EQUIPMENT

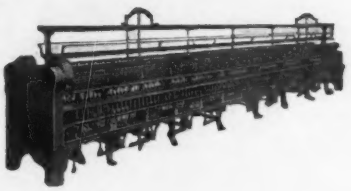


"WOONSOCKET"
Machine & Press Co., Inc.
WOONSOCKET, R. I.



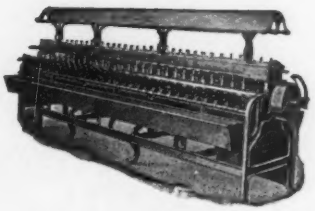
Cotton Opening, Conveying, and Picker Room Machinery Revolving Top Flat Cards, Drawing Slubbing, Inter. and Roving Frames.

"FALES & JENKS"
Machine Company
PAWTUCKET, R. I.



Ring Spinning Frames, Ring Twisters for Cotton, Wool, Worsted, Silk, Linen, Jute and Novelty Yarns.

EASTON & BURNHAM
Machine Company
PAWTUCKET, R. I.



Spooling and Warping Machinery, Reels, and Skein Winders.

Auto Banding Machines, Card Grinders and Spindles.

MAIN OFFICE AND EXPORT AGENT, - - PAWTUCKET, R. I.

SOUTHERN OFFICE, - - - - - - - - GREENVILLE, S. C.

Uniform *Tension*

reduced Damage to Yarn in handling

Eliminates Weak Spots and reduces Loom Stops

THE lack of uniformity in spooling and warping is the source of most of the expense, stops and general troubles at the loom.

As the process is usually practiced, using ordinary spooling and warping machinery, it is positively injurious to the yarn. The tension on ordinary spoolers is high and very irregular, and good yarn is often strained nearly to the breaking point by the sudden stresses put upon it by the bouncing of the bobbin in its cradle. Weak places result, which later cause trouble at the loom.

At the ordinary warper, the tension on the thread is also high and very irregular as may be noticed upon examination of the surface of a beam. The threads having lower tensions build up higher than those with high tensions. The threads lying in the bottoms of the grooves are the ones that have to be stretched the most in the slasher and consequently will be weaker than the others. If the threads wound under high tension predominate in the loom beams, the low tension threads will run slack and cause trouble in the looms.

Barber-Colman Automatic Spoolers and High Speed Warpers have removed much of the expense and delay in the weave room by controlling a slow uniform tension on the yarn at the spoolers and warpers which in turn has reduced stops at the loom from 25 to 35%.

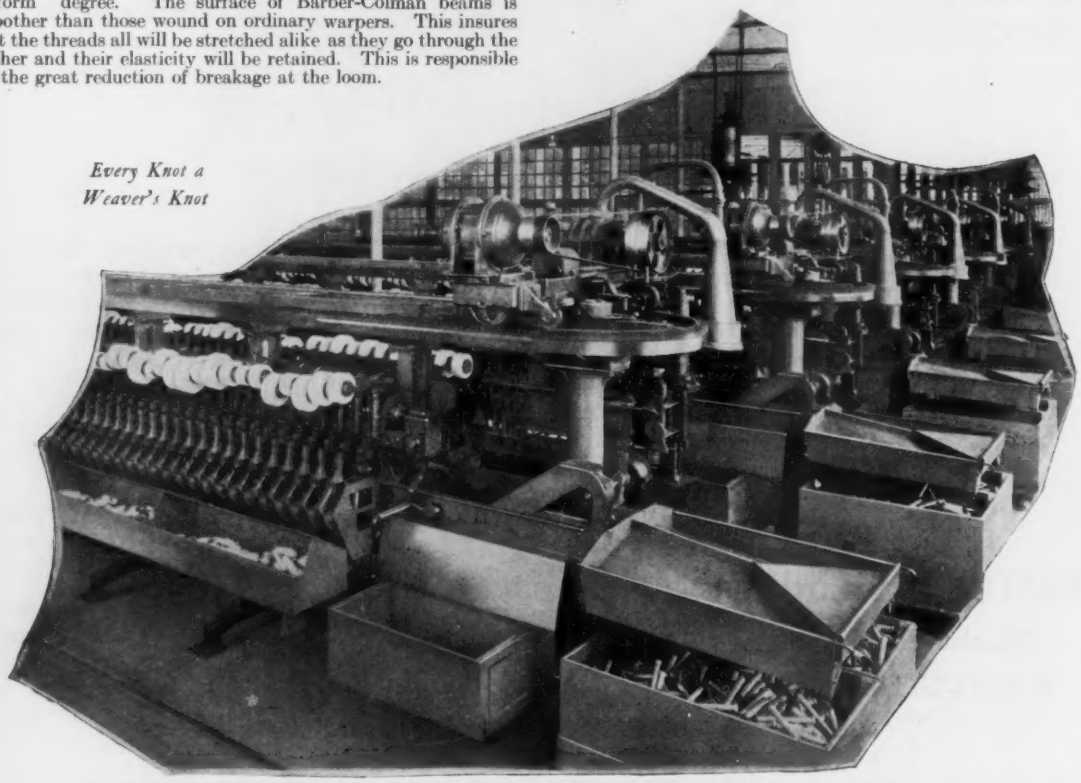
A reduction of 25 to 35% stops at the loom means not only increased production but also a saving in the weaving cost due to the fact that the weaver can tend more looms, each loom having fewer stops and requiring less attention.

The mere examination of the surface of beams wound on ordinary warpers as compared with beams wound by the Barber-Colman process is sufficient evidence of the difference in control of tensions.

At the Barber-Colman warpers, the yarn is wound from ball bearing containers. Tension is reduced to a remarkably low and uniform degree. The surface of Barber-Colman beams is smoother than those wound on ordinary warpers. This insures that the threads all will be stretched alike as they go through the slasher and their elasticity will be retained. This is responsible for the great reduction of breakage at the loom.

A careful estimate will be submitted upon request to all mill operators desirous of examining definite figures on operating costs for Barber-Colman Automatic Spoolers and High Speed Warpers, saving in labor costs, increased quality production, etc., net savings that will pay for an installation in a short time.

Every Knot a Weaver's Knot



B V C
TRADE MARK

BARBER-COLMAN COMPANY

BOSTON, MASS. ROCKFORD, ILLINOIS GREENVILLE, S. C.

Keep Your Motors Running

Prevent Burnouts and Costly Shutdowns

THE new Cutler-Hammer "X" Starters keep the motors running—prevent production delays.

Aside from their long life construction—the *thermal* overload protection allows the motor that is thrown across the line sufficient excess current to accelerate properly. A rise in current does not necessarily cause the motor to be disconnected.

But, if the overload during starting or when running maintains long enough to cause serious overheating of the motor windings—then (before damage occurs) the motor will be disconnected.

Two safeguards against delays

First—the motor is not unnecessarily and frequently cut off from the line.

Second—burned-out motor windings are prevented—thus eliminating replacement of motor and expense of re-winding.

A few in stock will take care of the requirements for a wide range of motors from ¼ hp. up to 7½, 10 and 15 hp. depending upon the voltage and type of motor. By simply using the Thermal Cutout of proper rating for the 9585 Starter, or the proper relay heater coil for the 9586, the one starter is suitable for use with motors of various sizes. Let us mail you our new publication No. C-25.

New C-H Thermal Overload Relay has ideal protective characteristics. Nothing to replace after tripping—simply press the reset button. Adjustable to individual motor loads, giving exceptionally wide application.

THE CUTLER-HAMMER MFG. CO.

Works: **Milwaukee and New York**

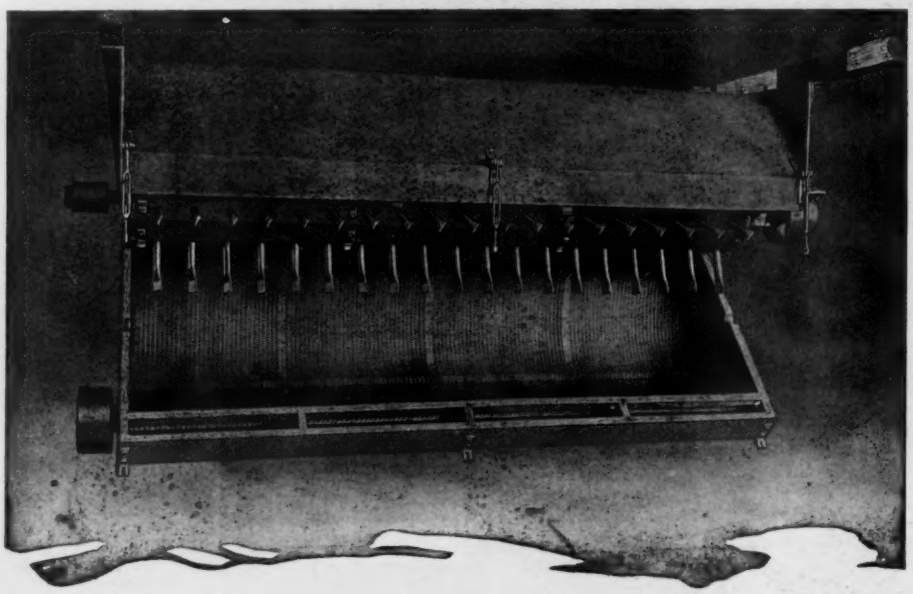
Branch Offices:

New York: 8 W. 40th Street
Chicago: 323 N. Michigan Ave.
Pittsburgh: Century Bldg.
Philadelphia: Com'wealth Bldg.
Cleveland: Guardian Bldg.
Boston: 52 Chauncy Street
Detroit: 506 Hofman Bldg.
St. Louis: 2111 Ry. Exch. Bldg.
Buffalo: 358 Ellicott Sq. Bldg.
Milwaukee: 530 Grand Avenue
Cincinnati: 415 Dixie Terminal Building

Inquiries from the Pacific Coast may be directed to the H. B. Squires Co., Los Angeles, San Francisco, Portland, Seattle

Northern Electric Co., Ltd., Canada

CUTLER-HAMMER



Uniform Yarn Becomes a Reality

The use of the Murray Cotton Cleaning and Aerating Machine goes a long way towards making uniform yarn a reality. It prepares the raw stock by giving it a thorough cleaning between the bale breakers and the picker room, removing all dirt, trash and other foreign matter which causes yarn defects. The advantages are felt all along the line. Production is increased, interruptions and waste reduced and a more uniform yarn becomes a reality.

The Murray fits in and becomes a part of the conveyor pipe, its revolving arms treat the stock without twisting, curling or breaking the fibre. 3 to 5 H.P. is all that is required to operate these revolving arms—the ordinary suction of the conveyor fan does the rest. It has a working capacity up to 2500 lbs. per hour.

Many mills have adopted the "clean it in the conveyor" system and there are now over 300 Murray machines in successful operation throughout the country.

Find out more about the Murray—write today for full information.

THE MURRAY COMPANY, ATLANTA, GA.

Northern and New England Sales Representatives:
Aldrich Machine Works
P. O. Box 132, Providence, R. I.

Carolina Sales Representatives.
Carolina Specialty Co.
Brevard Court
Charlotte, N. C.

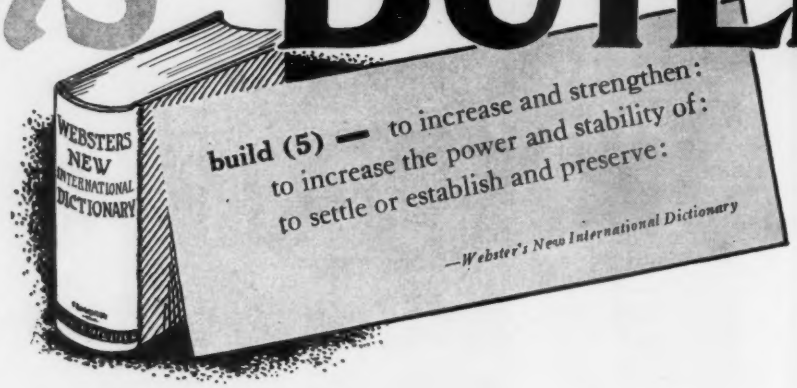
The Murray
(PAT. PENDING)
COTTON CLEANING AND AERATING MACHINE

COTTON WELL OPENED IS HALF SPUN

On October 31st the manufacture of the Lincoln Motor (*internationally accepted as one of the highest grade motors on the market*) was definitely stopped

for reasons on the following pages -----

Let's BUILD



Lincoln has done it!

Before abandoning the standard Lincoln Motor the result of service tests of the new motor extending over two years in many industries were compared with those of the old motor.

In every case the new motor won the decision.

"LINC-WELD" is now the name-plate on the only motor in the world built by a radical departure from general practice in motor construction.

Three things only are carried over into this new *lift* in engineering standards:

(a) The Lincoln-developed super-insulation which enables a motor to operate when completely submerged in water.

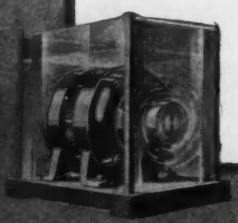
(b) The Lincoln tradition of high-type workmanship and

(c) The specialization of a great organization on one item with straight-line production of that item.

Great credit is due the motor industry in general for the high state of development to which it has attained on the hide-bound manufacturing standards which have done for motors about the same as *code* has done for wire.

The Linc-Weld motor is the first motor in the world to step out from these dead-leveling construction influences.

By an *entirely* different *process* which is revolutionizing manufacture in a score of industries, the motor-using public is afforded a product containing features never before incorporated in motors.



LINC

a motor!

These features are remedies for interruptions in service

—due to mechanical failures
—due to electrical failures
—due to lubrication failures
—due to ventilation failures.

In each of these improvements over existing motors the credit is due solely and entirely to the *stable arc process.*

In the Lincoln motor we went a long way toward the solution of these problems but were hampered by the bulkiness of castings.

In the Linc-Weld motor we have gone the *whole* way because the *stable arc process* has enabled us to BUILD with *structural steel* which in relation to castings is

Five times as strong in tension
Twice as strong in stiffness
At one third the cost per pound.

We desire to place in the hands of every man who is in any way interested in motors the photographs and the comparative data.

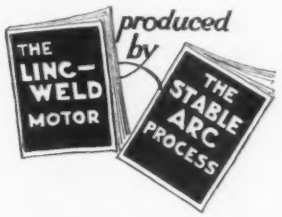
It is fitting that every electrical man be accurately posted on features that have placed motor making on a new plane.

And every man interested in producing a product in which either cast iron or pressed steel is used should read the Stable-arc book—both books for that matter—for while one illustrates and describes the process the other shows how in one field (motors) it has placed the product a year, conservatively, ahead of competition.

Both books are sent gratis.

Illustrated answers

Realizing that the news value of the new process motor, as well as the process by which it is constructed, will naturally bring up many questions—two very completely illustrated volumes have been prepared thoroughly covering the subjects:



These books are in envelopes ready to be sent by return mail to all persons requesting them.

For your convenience in getting your copies—simply pencil in your address on the coupon below.

The Lincoln Electric Co.
Cleveland, Ohio

-WELD

COUPON

To The Lincoln Electric Co., Cleveland, Ohio

Please send to Mr. .....

Address .....

.....

The Motor Book ☐
The Stable Arc Process Book ☐

Automatic Measurement--
The Source of Greater Profits in Industry

THE saving of materials by automatic measurement is today's outstanding source of greater profit in industry.

Of the three principal cost elements—labor, expense, and materials — labor and expense are controlled by time clocks, time studies, periodic comparative statements, and statistical reports compared by accounting departments and auditors.

But there still remain concealed costly shortages which are customarily charged off in the annual inventory adjustment. And this mysterious difference between profits expected and profits realized is frequently due to errors in the measurement of materials.

It is with a full understanding of the importance of the measurement of materials, that Toledo Scales are designed, made, and sold.

They are adaptable to any measurement problem; are simply designed and ruggedly built, and afford automatic protection against human and mechanical error — the operator merely puts on the load and reads the exact weight or count on a great dial from 5 to 7 feet in circumference.

To insure continuously accurate operation, service stations are maintained in 106 cities in North America.

To modernize YOUR measurement operations the first step is an investigation by Toledo Scale engineers. This costs you nothing; it may save you much.

Toledo Scales are used for automatic weighing, computing, counting, mailing, checking, packing, shipping and special purposes in stores, offices, shipping rooms, factories, mills and warehouses. Scales to weigh everything from an ounce of spice to thirty tons of steel.

Toledo Scale Company, Toledo, Ohio

Canadian Toledo Scale Co., Limited Windsor, Ont.

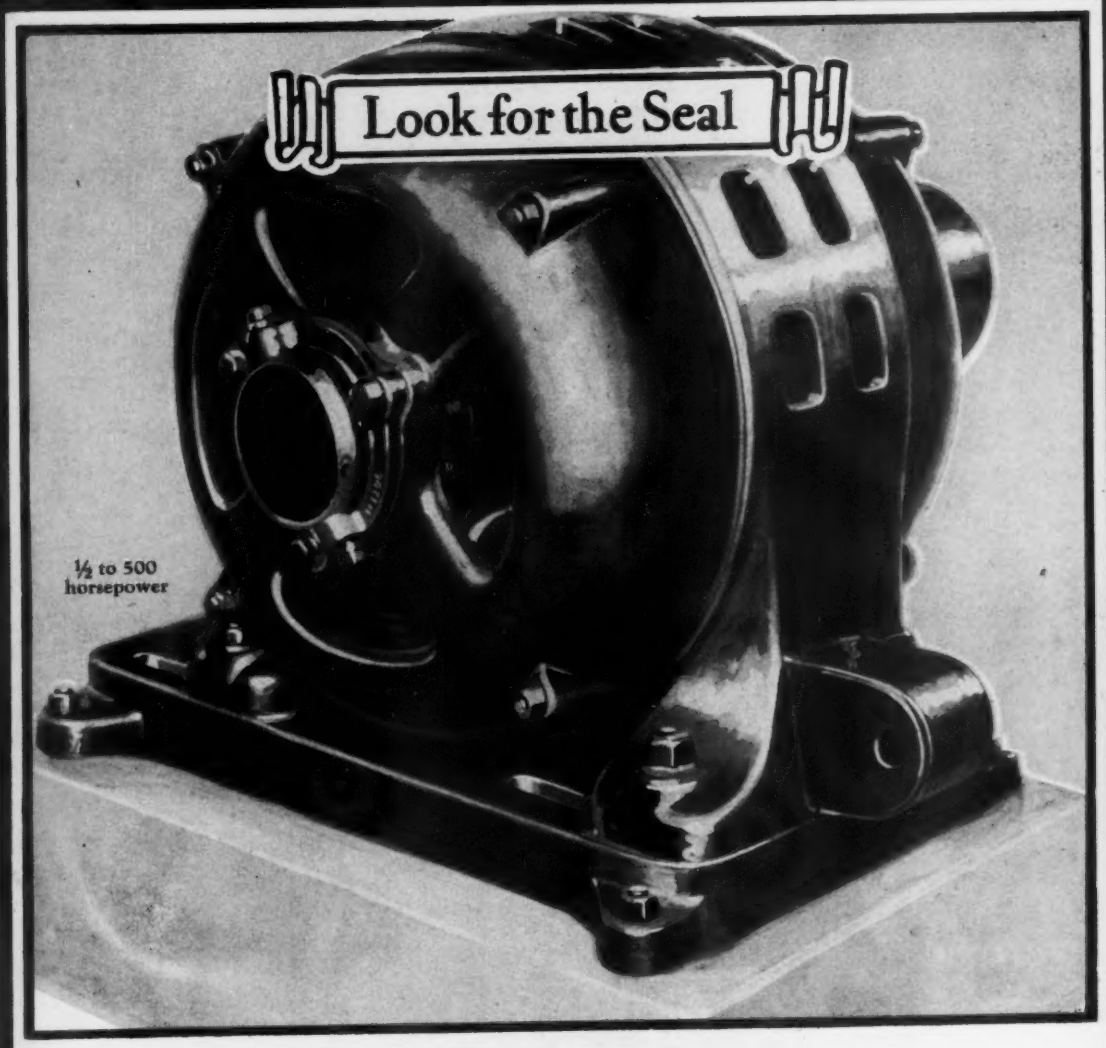
Manufacturers of Automatic Scales for Every Purpose

Service Stations in 106 Cities in the United States and Canada

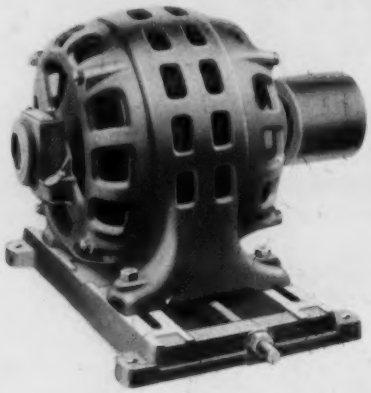
TOLEDO SCALES

NO SPRINGS HONEST WEIGHT

FAIRBANKS-MORSE



Pioneer Manufacturers
OF
ball bearing motors



Sleeve bearings and ball bearings

Men who know motors will tell you that electrically and mechanically Fairbanks-Morse sleeve bearing motors represent the best motor construction of the sleeve-bearing type. They will also tell you that the Fairbanks-Morse ball-bearing motors are better mechanically.

In other words, the ball-bearing construction used in Fairbanks-Morse motors simply marks the difference between a *fine* motor and a *super* motor.

Whether equipped with sleeve bearings or ball bearings, every Fairbanks-Morse motor is conservatively rated to allow for sustained overloads. The frame construction is exceptionally rigid. Heavy insulation, impregnated with varnish that will not harden and crack, makes the possibilities of breakdown remote.

If you want the best sleeve-bearing motor, specify Fairbanks-Morse. If you want the added advantages and economies of ball bearings, specify Fairbanks-Morse *ball bearing* motors.

Fairbanks-Morse Alternating Current Motors, with ball bearings or sleeve bearings, are built in sizes from one-half to 500 horsepower for general purpose and special applications. Write to Fairbanks, Morse & Co., 2060 Northwestern Ave., Indianapolis, Ind., for further information.

FAIRBANKS-MORSE BETTERMENTS

- High efficiency.
- Capacity for sustained overloads.
- Dust-proof bearings.
- Grease lubrication that prevents oil-soaked insulation.
- Lubricated only once a year.
- No shaft wear.
- Insulation that does not harden and crack.
- Exceptionally rigid frame construction.
- Jointless squirrel cage rotor winding.

Guaranteed by Fairbanks-Morse

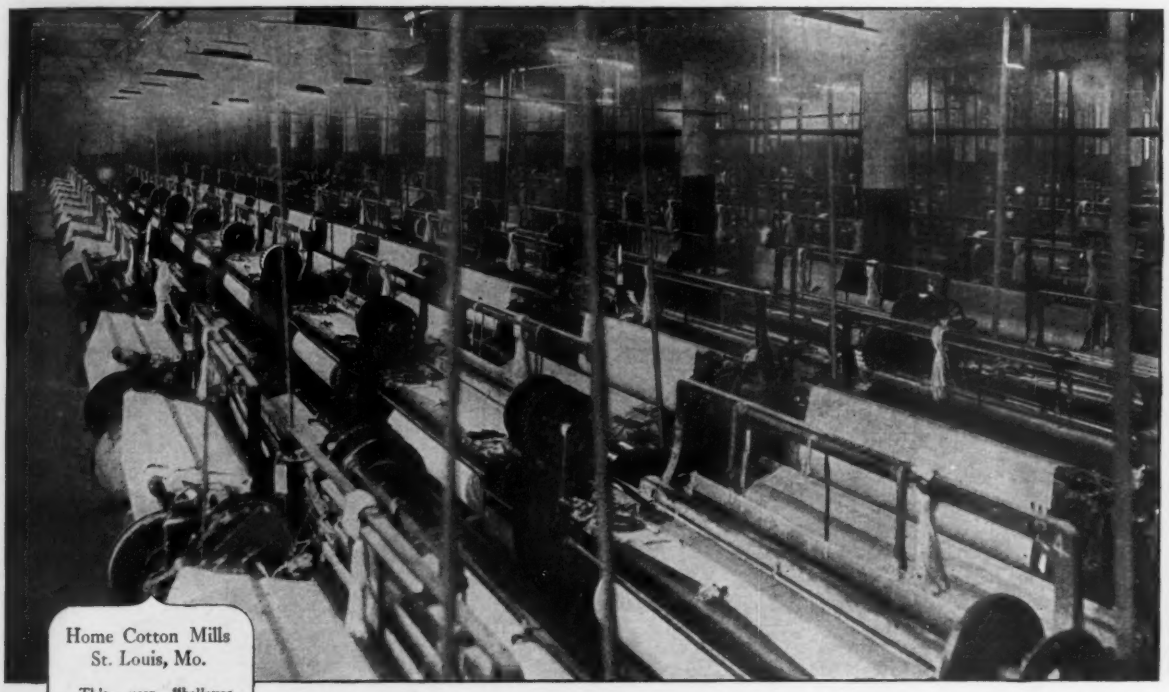
FAIRBANKS, MORSE & CO., Chicago

Manufacturers of Electrical Machinery
Oil Engines and Pumps

25 branches throughout the United States, each with a service station

FAIRBANKS-MORSE
motors and generators

A797



Home Cotton Mills
St. Louis, Mo.

This user "believes Work-Light best obtainable for this sort of work." Photo shows Work-Light at night in the weave room.

Why is this different light used in so many leading mills?

LIGHT that is yellow-green and cool, diffused from a tube instead of a bulb! Used by Crompton, Stehli, Masland Carpet, R. & H. Simon, Home Cotton, Cross Cotton, Post & Sheldon, and other famous mills.

In the knitting industry used by Real Silk, Hole-proof, Allen A. Wayne, Chipman, Davenport, Apex. In the automobile field—Packard, Chrysler, Ford, General Motors, Studebaker, and nearly all the others.

Why is it that so many leading plants agree in choosing Work-Light? Is it cheaper to buy? No. Is it more ornamental? No. Does it consume less current? Not always.

The answer is that Work-Light provides operating advantages that cannot be expected from ordinary light. Rich in the yellow-green rays that do most to help men see, it increases production, cuts costs, and prevents eye-strain and headache. Workmen finish the day with their eyesight almost as fresh as it started. Night shift equals day shift in quantity and quality alike.

And there is no experiment about it. Work-Light has a record of performance, day by day and night by night, in all sorts of plants, covering more than 22 years.

See Work-Light in your own mill before you make any lighting investment. We will furnish, without obligation on your part, enough Work-Light lamps for a trial in any department you select. Write or wire Cooper Hewitt Electric Co., 89 River Street, Hoboken, N. J.

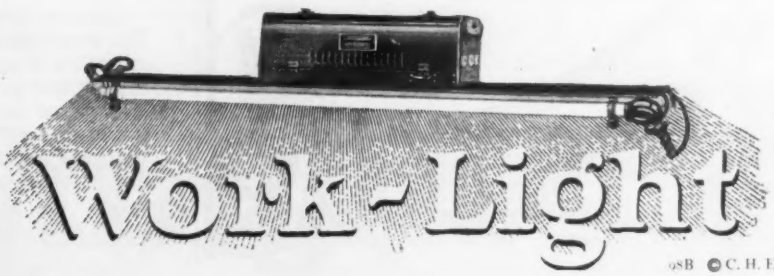
COOPER HEWITT WORK-LIGHT

Comparisons like these tell the Work-Light story

One textile plant found that, under Work-Light, its workmen could count threads hung 20 feet away. Under ordinary illumination, the same men had to move 10 feet closer to the threads in order to see clearly enough to count. This plant is now a Work-Light user.

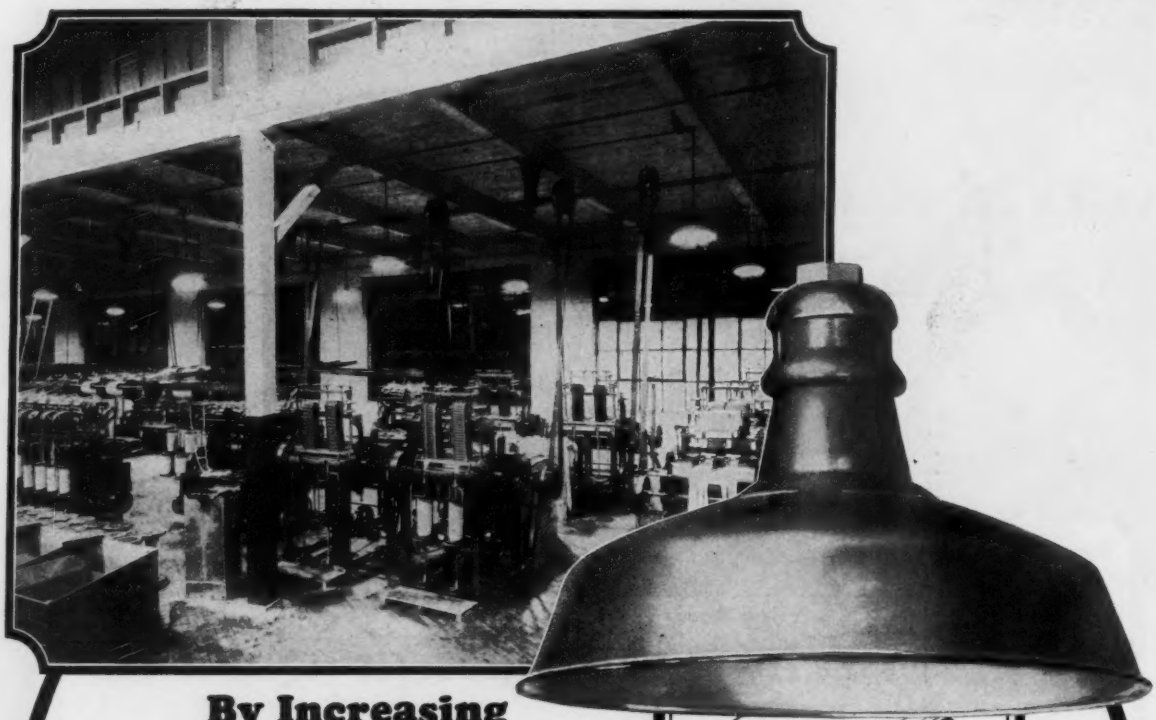
Holeproof Hosiery Company found that, with Work-Light, the percentage of hosiery that required re-boarding was cut in half. Reporting on their investigations in the knitting departments, Holeproof engineers credited Work-Light with having effected a definite production increase of 4.2 per cent.

A manufacturer of locomotive stokers installed Work-Light in a basement department and found that for the first time workers in that part of the plant were able to earn a bonus. Naturally, the difficulty previously experienced in inducing men to work there quickly disappeared.



98B © C. H. E. Co. 1925

Good Illumination Pays Dividends



By Increasing Production

Correct Illumination Saves $63,900 Yearly

[Talk No. 2]

A saving of 57 minutes in each man's day of nine hours was shown in a recent survey of a number of factories.

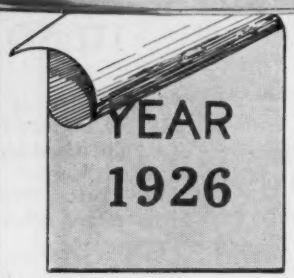
Using these figures as a basis, a plant employing 300 men at an average of 75 cents per hour would save 71 cents daily per man or $213.00 for the entire force. In a year of 300 working days, the saving would be $63,900.

Good lighting surely pays dividends.

THE REASON

With correct illumination a man works with much the same efficiency as by daylight. The light is sufficient for him to work without eyestrain; no objectionable shadows handicap him; glare is eliminated.

Westinghouse Electric & Manufacturing Co.
Merchandising Dept. South Bend, Indiana
Sales Offices in All Principal Cities of the United States and Foreign Countries



A Brighter 1926

That time of the year is approaching when most industrial plants are making their plans for improvments during the coming year. Include this greatest of all improvements, efficient lighting. Making 1926 brighter and more prosperous.

Let us work with you. The Westinghouse Illuminating Engineering Bureau will gladly plan a dividend-paying installation for you. This service is free and does not obligate you in any way.

W WESTINGHOUSE ELECTRIC

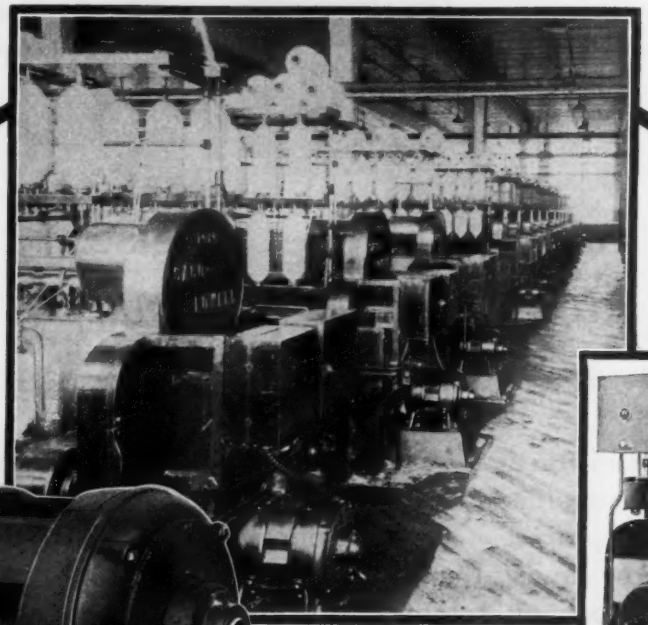
Westing se

X85523

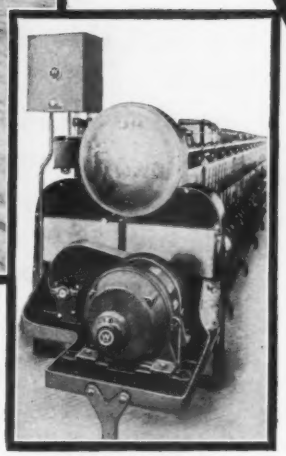
The Lincoln Mills

Install

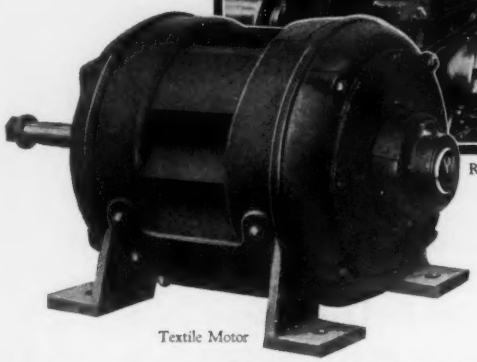
Individual Roving Frame Drives



Roving Frame installed at the Lincoln Mills



Detail view showing mounting of equipment



Textile Motor

WESTINGHOUSE individual drive equipment has been installed on the Roving Frames in the new mill of the Lincoln Mills, at Huntsville, Alabama. Each frame is driven by an individual textile motor, which is controlled by a magnetic starter and shipper operated master switch.

Westinghouse individual roving drives are designed with a starting torque low enough to bring the speed of the spindles up to maximum, without breaking the yarn.

The inching of the machine, so as to bring the "flyer" in correct position, is accomplished easily by the master switch and starter, through the usual "shipper-rod" operation.

Westinghouse engineers gladly will explain in detail the advantages of the above drive.

Ask us—Ask the Mill

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in all Principal Cities of
the United States and Foreign Countries

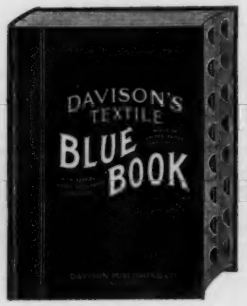
WESTINGHOUSE ELECTRIC

Westinghouse

X-35549

IT MERITS SERIOUS CONSIDERATION

38th Annual Edition Now Ready



Thumb Indexes for Quick Reference

This new 1900 page register gives the latest revised reports on all textile mills in the U. S. and Canada

All cotton and woolen mills are also classified by product made. Allied dealers' lines are carefully reported. Many spinners and mill reports show kinds of cotton and length of staple used, number of spindles, officers' names, capital, goods made, etc.

Reports on both domestic and foreign raw cotton firms show year established, partners' names, capital and number of bales handled per season. Thumb and alphabetical indexes enable instant reference to any section or to any mill or spinner.

Write, wire or phone for your copy before limited edition is sold to the trade

OFFICE EDITION $7.50. HANDY SIZE $5.00 PREPAID. SALEMEN'S DIRECTORY (MILLS ONLY) $4.00.

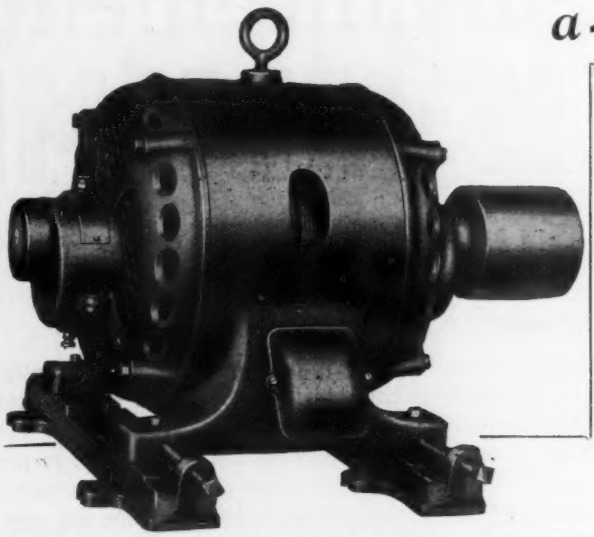
EVERYONE IN THE TRADE KNOWS THE RELIABILITY OF

DAVISON'S TEXTILE BLUE BOOK

"Since 1885 efficiently serving the textile industry"

50 UNION SQUARE - NEW YORK

"They Keep a-Running"



10 *Horse Power Century Squirrel Cage Induction Polyphase Motor*

Long-Life Bearings

The bearings of Century Squirrel Cage Induction Polyphase Motors stand up for years under heavy service requirements. They are built to exactly the same specifications as the bearings in other Century motors—many of which have been in continuous daily service for over 20 years without a single bearing replacement.

1. Only the highest grade cast phosphor bronze bearing metal is used in Century motor bearings. They are cast in electric furnaces in the Century plant.
2. They are machined overall to micrometer dimensions and provided with machine-cut figure 8 oil grooves which insure thorough oil distribution.
3. Bearings are liberally proportioned to withstand the pounding of gear drive and pressure from unintentionally heavy belt tension.
4. Lateral shifting is prevented by a heavy shoulder on one end of the bearing.
5. Throughout the life of the motor, the bearing housings remain as nearly dust tight as it is possible to build them.

Built in all standard sizes from ¼ to 50 horse power—temperature rise not more than 40° Centigrade.

Send for Bulletin 38

Bulletin 38 describes the complete assembly details of Century Squirrel Cage Induction Polyphase Motors. Send for your copy today.

CENTURY ELECTRIC COMPANY

1806 Pine St. **St. Louis, Mo.**

For More Than 22 Years at St. Louis

¼ to 50 H.P. Century MOTORS **¼ to 50 H.P.**

More Advancements from ALLIS-CHALMERS

Again Allis-Chalmers notably advances electric motor development. With the introduction of a series of induction motors equipped with Timken tapered roller bearings, the Allis-Chalmers line emphasizes its position of progressive leadership.

In these new motors more compact and more rigid design is possible. Full speed is reached with uniform and rapid acceleration, all the motion being *ROLLING* motion. And with a very small percentage of ordinary lubrication and inspection requirements the correct initial spacing of rotor and stator is permanently maintained. There is unprecedented endurance for any form of drive. And whatever the position required, lubrication is unaffected. Even the cooling vents are better placed because of the compactness of the bearing housings.

In fact, from the easier starting characteristics, to the reduced shaft overhang, a host of major improvements are added to established Allis-Chalmers excellence in design, operation and maintenance.

Commercial installations under rigorous conditions have returned astonishing data—a veritable education in modern motor economy. Write for literature or make an immediate personal appointment through the nearest Allis-Chalmers office.

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee

District Sales Offices in all Principal Cities

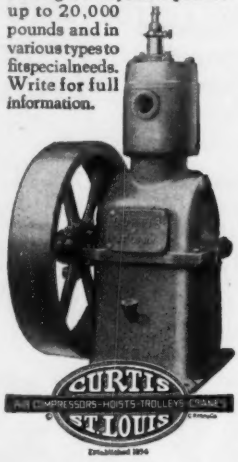
CURTIS

1854 - Seventy one years - 1925

Gives one man the power of 15

Think what a CURTIS Air Hoist suspended from a CURTIS Roller Bearing Single I-Beam Trolley will accomplish for you. With it, one man can actually do the work of 15. He can lift a 4000 lb. load by a mere pull on the hand chain or he can move 2 tons along a runway by exerting only a 50-pound push. The cost is no greater than an ordinary chain block. The CURTIS hoist and trolley (steel being used instead of cast iron) is stronger and lighter and the trolleys have flexible roller bearings, hence easier to operate. Expensive air leaks are minimized because the CURTIS air hoist has self-grinding valves. The valves of many CURTIS hoists are as tight today after 15 or 20 years of service as the day they left the factory.

The resources of a business 71 years old, 28 years' experience building pneumatic equipment and the facilities of a completely equipped plant 17½ acres in extent, enable us to furnish on short notice Curtis Air Compressors—"one-man" air hoists—and Flexible Roller Bearing Trolleys in capacities up to 20,000 pounds and in various types to fit special needs. Write for full information.



In the shops of the American Radiator Company here and abroad where most of the world's radiators are made, there are close to 1,000 Curtis Air Hoists in operation.

Mail this coupon for illustrated literature.

CURTIS Pneumatic Machinery Co.
1571 Kienlen Ave., ST. LOUIS, MO.
Branch Office: 552-R Hudson Terminal, New York.
Gentlemen—Please send your proposition and prices on Model "A" Air Compressor, Hoists and Cranes.
Name.....
Address.....
Jobber's Name.....
Address.....

Combination hydroelectric and steam reserve generating plants of The Tennessee Electric Power Company on the Ocoee River in East Tennessee.

Continuous Power Service in Spite of the Drought

Not a single customer of The Tennessee Electric Power Company in the textile industry, or any other industry, found it necessary to curtail operations during the unprecedented drought which recently prevailed in the South.

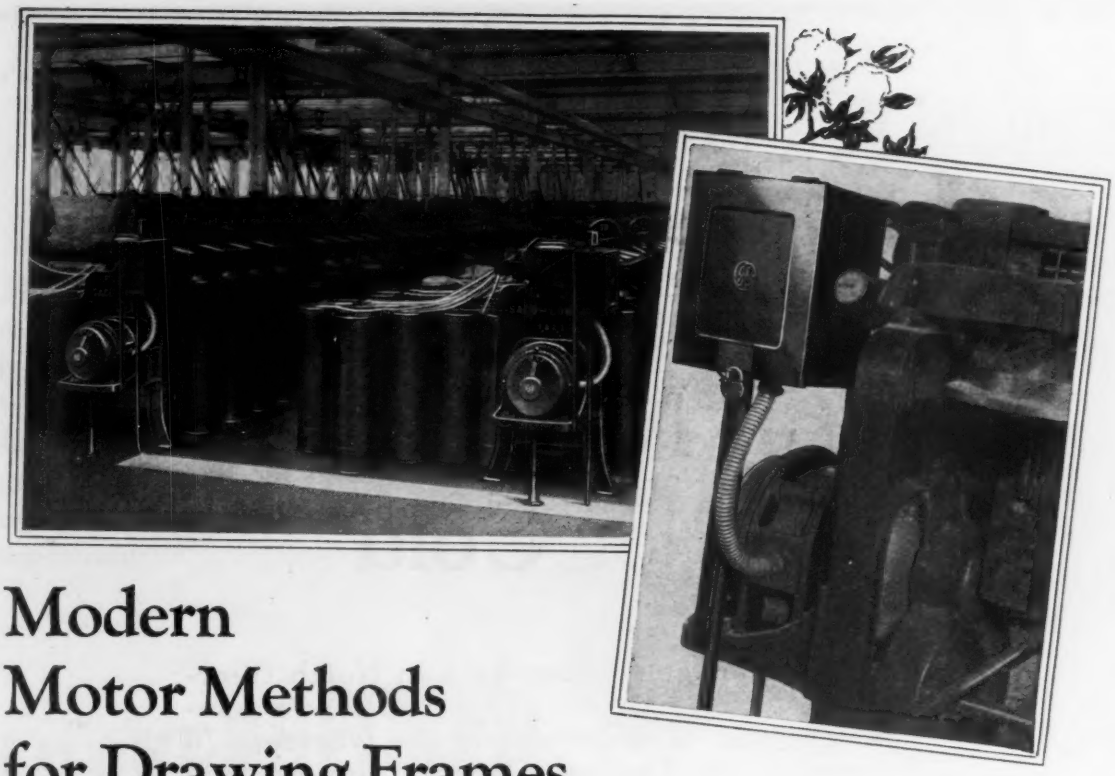
The wisdom and foresight exhibited by the management of The Tennessee Electric Power Company in the development of its properties—providing adequate steam reserve plants to supplement the output of its hydroelectric stations in times of need—enabled the company to maintain its own record and that of its predecessors in *never curtailing or suspending service to any customer.*

The picture shows one of the combination hydroelectric and steam plants operated by the company. Altogether this power system comprises four large water and four large steam plants, totaling 265,180 horsepower, which furnish electricity to industries in 125 cities and towns of Middle and East Tennessee.

Ample, dependable electric power, regardless of conditions, is thus assured to all manufacturers locating in this section. Write us for information about Tennessee.

The Tennessee Electric Power Co.

Chattanooga, Tennessee



Modern Motor Methods for Drawing Frames

The modern drive for drawing frames is an individual motor with suitable control for each frame; or a group of frames arranged in line, with their shafts coupled together, and driven by a single motor.

Individual motor drive of drawing frames obtains and *maintains uniform speed.*

In addition, motors mean better working conditions—cleanliness, less noise and confusion, less danger to life and limb.

FITTING THE MOTOR TO THE MACHINE

Each G-E Motor, instead of being a make-shift, is designed and built for the special service for which it is recommended and sold.

7B-24

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL LARGE CITIES

In Georgia---

It Is Neither Hot Nor Cold

THE average temperature in North Georgia is 52 degrees. The cold mean temperature is 42 degrees and the warmest 76 degrees. In Central Georgia the general average is 63, winter 47, summer 78. Rainfall for the year average, 51 inches.

Manufacturing plants in Georgia never find their workers slowed up by extreme heat or extreme cold.

The mountain ranges that are largely responsible for this excellent health and vigor-making climate also makes possible the hydro-electric development that assures a constant, dependable supply of low-priced power.

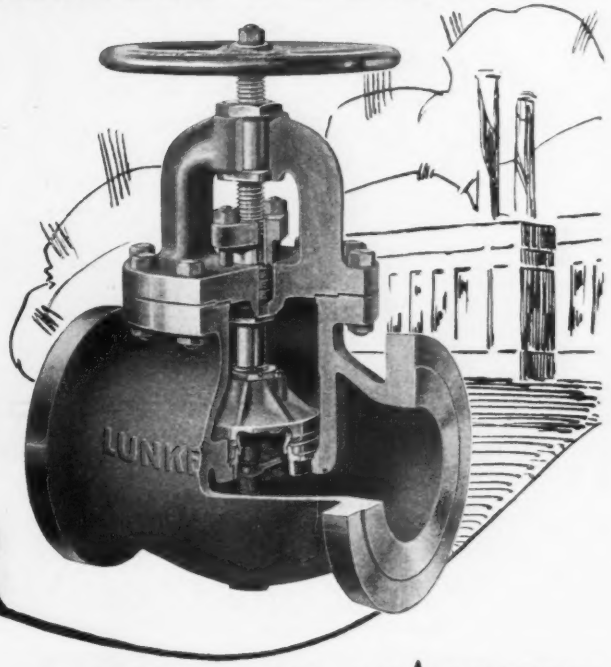
Our booklet "Industrial Georgia No. 7" gives much information in regard to the industrial possibilities of Georgia. Write for it.

Georgia Railway and Power Co.

ATLANTA

MINIMUM MAINTENANCE EXPENSE INSURES MAXIMUM ECONOMY

The name "Lunkenheimer" on a valve immediately identifies it as a long life valve—one that will render continuous satisfactory service, with the least amount of attention, and without frequent costly repairs and replacements.



LUNKENHEIMER GLOBE, ANGLE AND CHECK VALVES

are standard equipment in thousands of plants because of their economical performance over long periods of time. Once installed, they require very little attention; they stay tight, and maintenance expense is negligible. Procurable in bronze, iron or steel, in all standard sizes, for all prevailing pressures and temperatures. The extensive line provides a selection of the correct valves for any service.

Lunkenheimer Distributors are located in all commercial centers, and render prompt service right from stock. Call on them when in need of Valves, Boiler Mountings and other Engineering Appliances.

Have you a copy of the "Guide to Better Service?" It's a valuable book, showing in convenient form an ideal selection of Valves and Engineering Appliances. The center pages illustrate the application of Lunkenheimer Boiler Mountings conforming to the A. S. M. E. Code. A copy will be sent without obligation. Just fill in and mail the coupon.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO BOSTON LONDON
EXPORT DEPT. 129-135 LAFAYETTE ST., NEW YORK

Fill in and mail this coupon for your "Guide to Better Service."

THE LUNKENHEIMER CO. "QUALITY" P. O. Box 876 Cincinnati, Ohio

Please send me a copy of Lunkenheimer "Guide to Better Service," AK.

Name .....

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13039-2-10

CONDENSATION

A Problem Worthy of Study by Specialists

CONDENSATION is often overlooked as a source of trouble in the efficient operation of a steam plant.

Hidden and unthought of, condensation often represents the difference between profitable operation and loss. Pressing necessity in the face of rising fuel charges and severe competition has sharply focussed attention on this subject.

Engineers generally are devoting more and more attention to this aspect of plant operation. And the more they study, the greater their realization that here, indeed, is a problem possessing many angles, one where a *little* knowledge is truly dangerous.

It is true that steam drainage is fundamentally the same in every industry. However each branch of industry, and each individual installation presents its own particular problems.

The Morehead Manufacturing Company and its engineers have specialized on these problems for many years. It is natural that a company with such a background should have achieved success in this field.

Recognizing the fact that condensation is a non-conductor of heat and that heating surfaces must be kept dry if anything like efficient heat transference is to be effected, this company has developed methods for achieving this result.

Whether yours is a power plant, sugar mill, green house or other plant where steam is employed in heating, cooking, drying, evaporating or process work, Morehead engineering service will be extremely valuable.

If production is low, fuel consumption high, or heating surfaces unevenly temperatured, our engineers will be able to help you. Daily they are providing methods to meet such conditions successfully.

For immediate and lasting improvement in your steam conditions, drop us a line, a postal card will do, and let our engineers work with you.

MOREHEAD MANUFACTURING COMPANY
GRAND RIVER AVE., AT SIXTEENTH
Detroit, Michigan (147)

Where Friction Attacks Hyatt Bearings Protect

THE bearing points in your machinery—that is where friction seeks to waste and destroy.

When plain bearings are used the inevitable results are loss of power, excessive lubrication requirements and trouble-making wear.

You can guard against these evils by using machinery equipped with Hyatt roller bearings. These modern bearings provide the easily rotating action of steel rollers in place of the dragging, wasteful friction of plain bearings.

Then, in contrast, the results are thoroughly reliable operation, substantial economies in power and lubrication, and the virtual elimination of wear.

Specify Hyatt bearings when buying textile machinery of any kind. They are investments that yield big returns.

The story of Hyatt equipped textile machinery is told in Bulletin No. 2100—fifty pages of interesting information illustrated with machine designs and photographs of installations. Write for a copy.

HYATT ROLLER BEARING COMPANY

NEWARK DETROIT CHICAGO SAN FRANCISCO
WORCESTER PHILADELPHIA CHARLOTTE
PITTSBURGH CLEVELAND

HYATT ROLLER BEARINGS FOR TEXTILE MACHINERY

Never Again!

A machine called the Spinning Jenny was invented 161 years ago. Then for the first time a great occupation, textile-making, began to go from a home-work basis to a factory-production basis.

History terms this the industrial revolution. The machine age dawned. Never again could the old methods of the spinning wheel compete.

A far-reaching industrial revolution is on now, too. Age-old wastes in production and transportation are being eliminated by the ever-increasing use of Timken Bearings. Never again can some of the biggest old items of production and operating costs be fully justified.

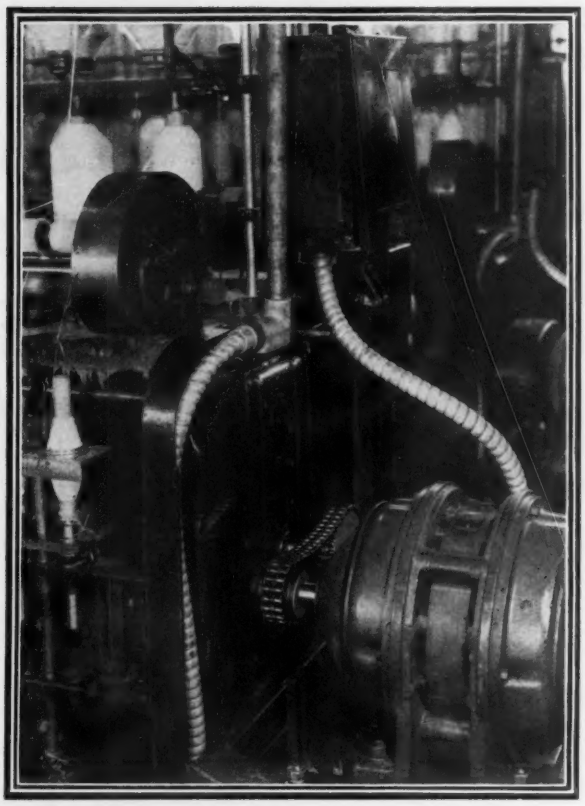
To-day in electric motors Timken Bearings offer manufacturers cheaper, most reliable power. In shaft hangers and pillow blocks Timken Bearings conserve the power on its way to work. In all varieties of machine tools and other shop equipment Timken Bearings speed the output and better it, while lightening the load, and saving lubricant. In modern transportation—witness the various types of motor vehicles—Timken Tapered Roller Bearings also increase speed and capacity while they are reducing power and maintenance costs.

Timken economies are to be credited to extreme load capacity, great freedom from friction, as well as to fine Timken-made special bearing steel.

Available in the products of so many big, established, highly reputed machine tool and equipment builders, Timken Bearings loom large before every manufacturer who has a progressive policy.

THE TIMKEN ROLLER BEARING CO., *CANTON, OHIO*

TIMKEN *Tapered Roller* **BEARINGS**



They're coming to Diamond for better drives

MILL OPERATORS and makers of textile machinery see the obvious economy and mechanical advantages of Diamond Roller Chain Drives. They are lower in cost than similar means of transmission, they take up less room, meet all the mechanical requirements, and keep running month after month, with reasonable attention. A Diamond Roller Chain drive does not slip or stretch, nor does it collect dirt. It improves the product because of the steady, smooth operation.

Do you want to talk with a man who knows the relation of satisfactory chain to your profit? Or would you rather read the catalog? It belongs in your technical library. Just write!

DIAMOND CHAIN & MFG. CO. Indianapolis, U.S.A.

Makers of High Grade TRADE MARK *Chains Since 1890*

Southern Distributors: C. T. Patterson Co., Ltd., New Orleans
Moore-Handley Hardware Co., Birmingham

DIAMOND
Roller Chains

DUXBAK BELTING TRADE MARK

Facts About Belt Quality

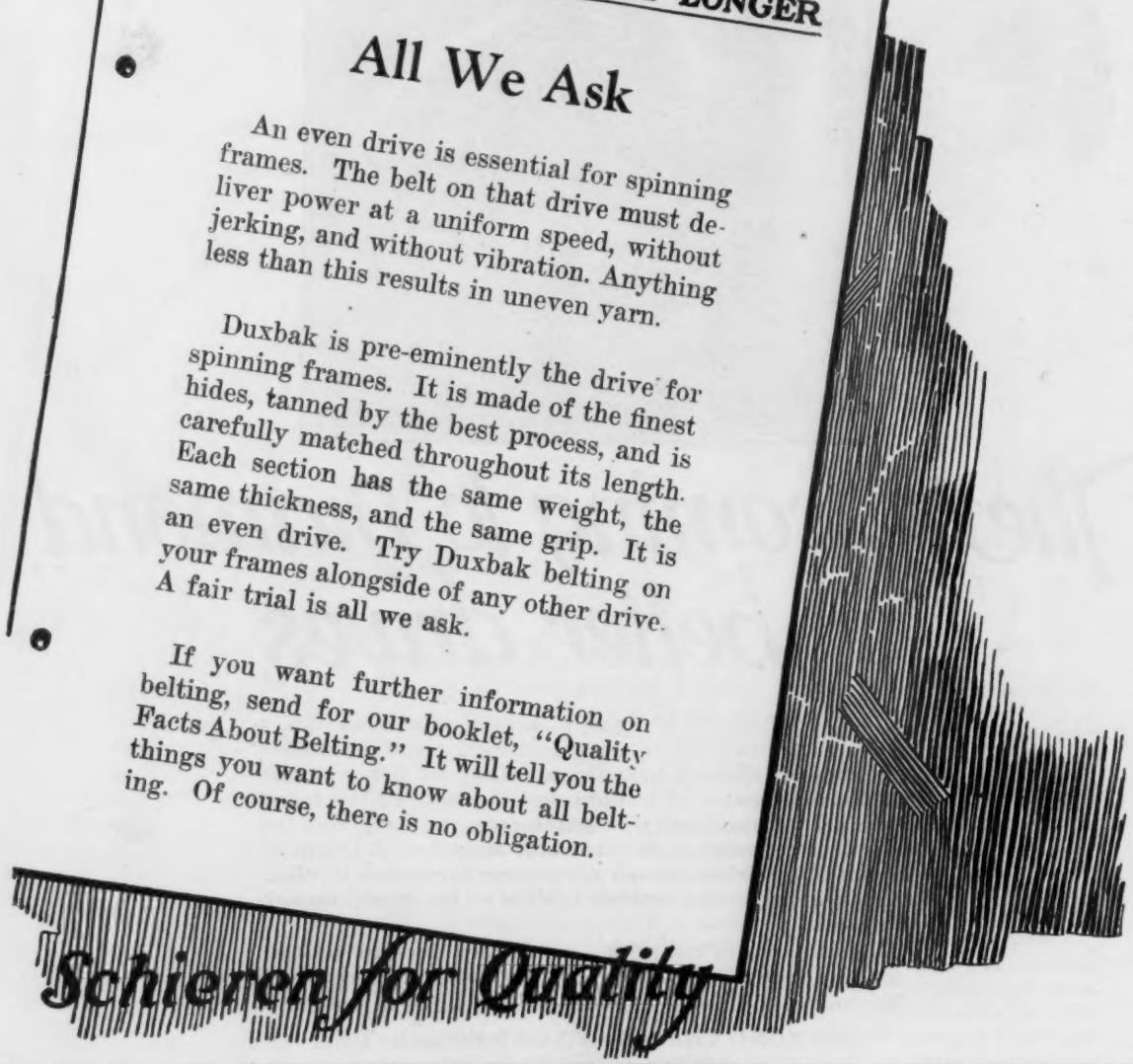
WHY SCHIEREN BELTS LAST LONGER

All We Ask

An even drive is essential for spinning frames. The belt on that drive must deliver power at a uniform speed, without jerking, and without vibration. Anything less than this results in uneven yarn.

Duxbak is pre-eminently the drive for spinning frames. It is made of the finest hides, tanned by the best process, and is carefully matched throughout its length. Each section has the same weight, the same thickness, and the same grip. It is an even drive. Try Duxbak belting on your frames alongside of any other drive. A fair trial is all we ask.

If you want further information on belting, send for our booklet, "Quality Facts About Belting." It will tell you the things you want to know about all belting. Of course, there is no obligation.



Schieren for Quality

DUXBAK BELTING TRADE MARK

Chas. A. Schieren Company ESTABLISHED 1868

Tanners
Belt Manufacturers
Main Office and Factory
26 Ferry Street, NEW YORK, U. S. A.
Branches and Distributors in All Leading Cities

Gentlemen: Kindly send me, without obligation, your series of "Quality Facts About Belting."

Firm Name .....

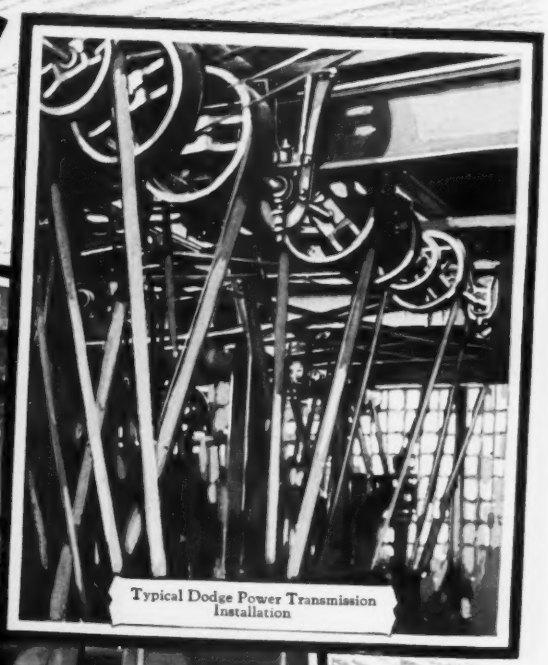
Address .....

.....

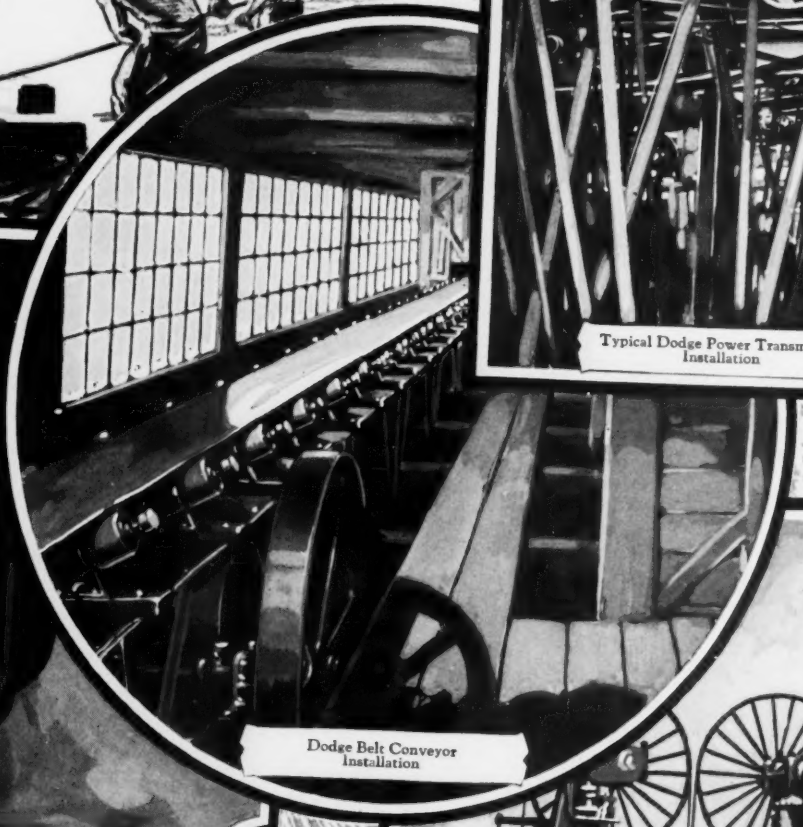
Signed by .....

DODGE

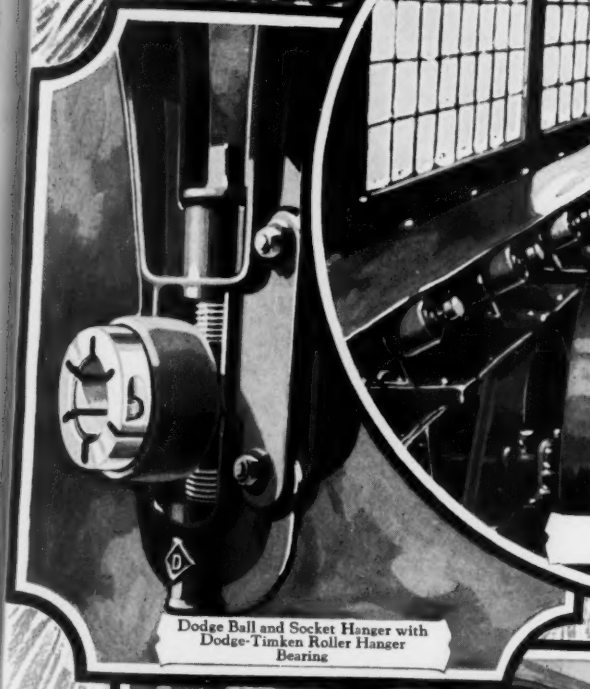
POWER TRANSMITTING
ELEVATING CONVEYING
AND SPECIAL MACHINERY



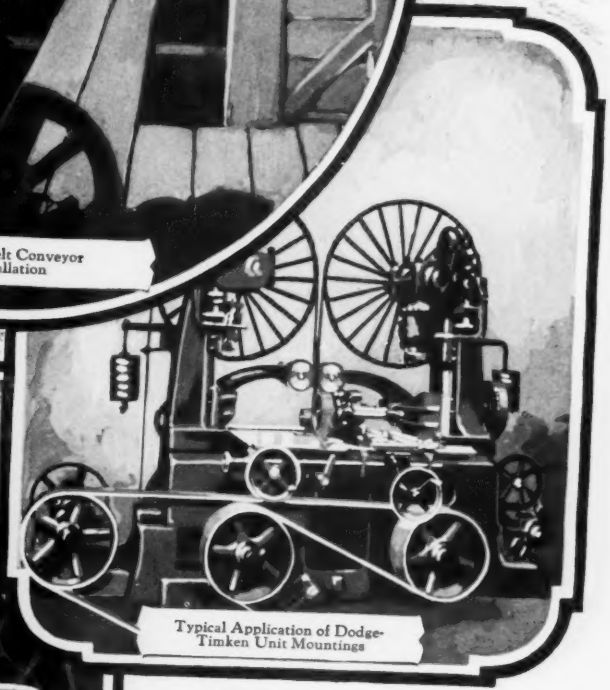
Typical Dodge Power Transmission Installation



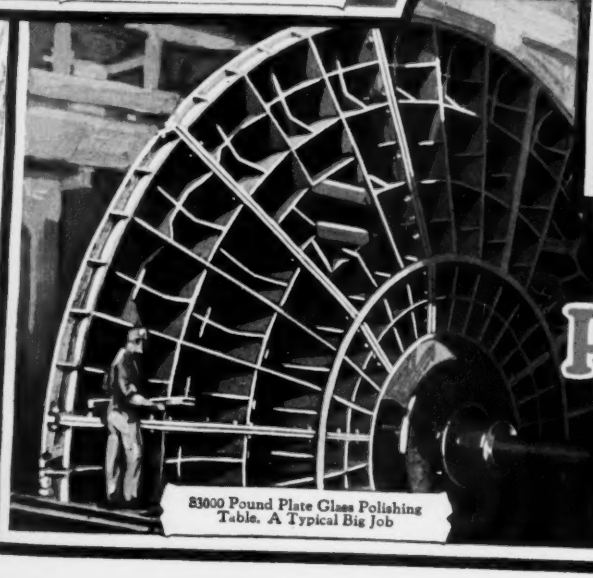
Dodge Belt Conveyor Installation



Dodge Ball and Socket Hanger with Dodge-Timken Roller Hanger Bearing



Typical Application of Dodge-Timken Unit Mountings



83000 Pound Plate Glass Polishing Table. A Typical Big Job

Pounds or Tons

DODGE

can build it.

The Worlds Marketplace
For Industrial Equipment

FOR power transmitting, elevating and conveying or special equipment from pounds to tons, Dodge experience, facilities and service combine to assure industry a dependable source of supply. Nearly a half century of contact with industrial production problems enables Dodge to offer practical and competent counsel and to build effectively and economically.

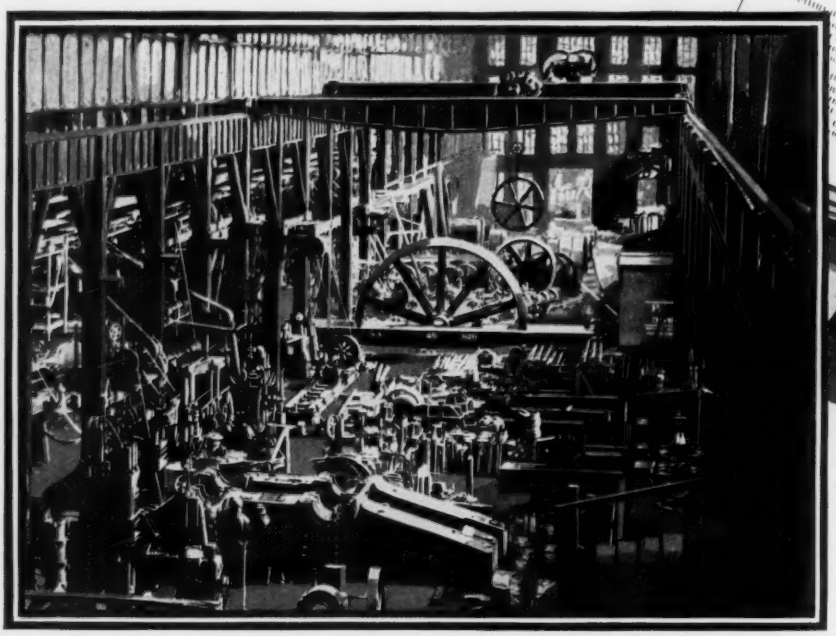
Dodge power transmitting units, including iron, steel and wood pulleys; hangers, pillow blocks, couplings, clutches, etc., are giving continuous, satisfactory and power saving service the world over. The application of the Timken Tapered Roller Bearing to Dodge-Timken Roller Hanger Bearings, Pillow Blocks, Loose Pulleys and Standard Unit Mountings for built-in machine applications proves that Dodge is keeping pace with industry.

Dodge material handling equipment in either standardized stock units or built to specifications is reducing costs in many of America's outstanding industrial plants.

Fourteen factory branches and five hundred mill supply and machinery dealers offer immediate service on stock products.

DODGE MANUFACTURING CORPORATION
Mishawaka, Indiana

Branches: Boston New York Newark Oneida Philadelphia Pittsburgh Cincinnati Chicago St. Louis Minneapolis Seattle San Francisco Houston Atlanta



Send all your specifications to Dodge

Let Dodge engineers analyze your specifications and apply the Dodge rule of low first cost plus trouble free operation to your requirements. Machinery manufacturers will profit by an investigation of Dodge-Timken standard unit mountings for built-in machine applications.

DODGE

POWER TRANSMITTING – ELEVATING – CONVEYING & SPECIAL MACHINERY

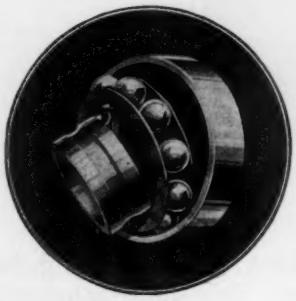
Why Not Give Your Machines "Bearing Life Insurance?"

You know, from your own experience, what bearing troubles are —how serious they may be—how much they may cost you—with bearings of even the best sleeve type. You know that the satisfactory performance, the earning power, the very "life," of machines with sleeve bearings depend upon ample and frequent oiling.

You know that the failure, the "seizing," of one sleeve bearing in a machine may cost you—in lost production—the price of a new machine.

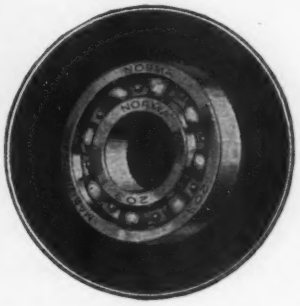
You know that your adoption of high-grade ball bearings would give your machines and yourself "bearing life insurance" protecting against losses due to bearing failure resulting from neglected lubrication.

Face the question fairly—can you longer afford to be without this dependable form of protection?



"NORMA"
PRECISION
BALL BEARINGS

OPEN and CLOSED TYPES



These super-quality bearings are in successful operation—under conditions where nothing but the best would serve—over a speed range of from less than 1 R.P.M. to 50,000 R.P.M. Rigidly mounted, vibrationless, provided with magazine lubrication, unequalled in precision and unsurpassed in character and treatment of materials—**"Norma"** Precision Ball Bearings represent the ultimate in ball bearing economy and stand-up-ability.

NORMA-HOFFMANN BEARINGS CORPORATION

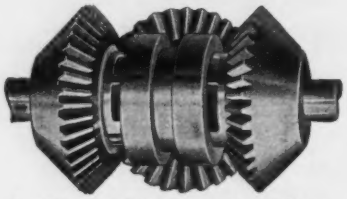
Stamford—Connecticut

PRECISION BALL, ROLLER AND THRUST BEARINGS

THE JOHNSON FRICTION CLUTCH

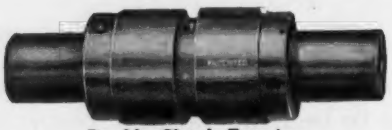
Performance Proves that the

Great Clutch for Dye Jigs Is the Johnson

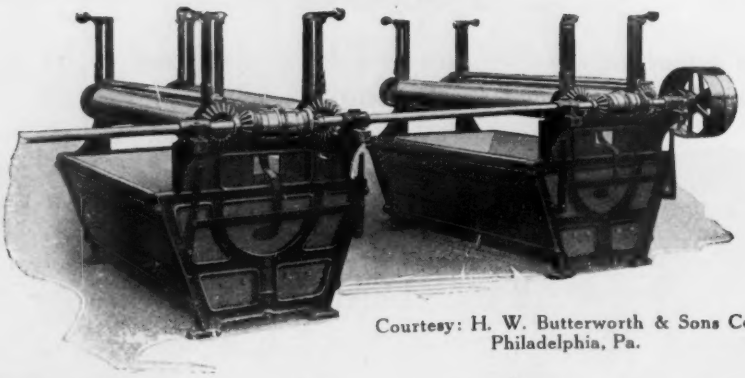


Double Clutch Between Bevel Gears

Just the Clutch that is suited to Dye Jigs—that's the Johnson. You would be surprised to know of the large number of Dye Jigs which are being equipped with Johnson Clutches at the present time. The Johnson's compactness, endurance, dependability and sure-start and quick-stop features make it especially adapted to the needs of Dye Jigs. Our photographs, blue prints and descriptions of actual installations will convince you.



Double Clutch Exterior



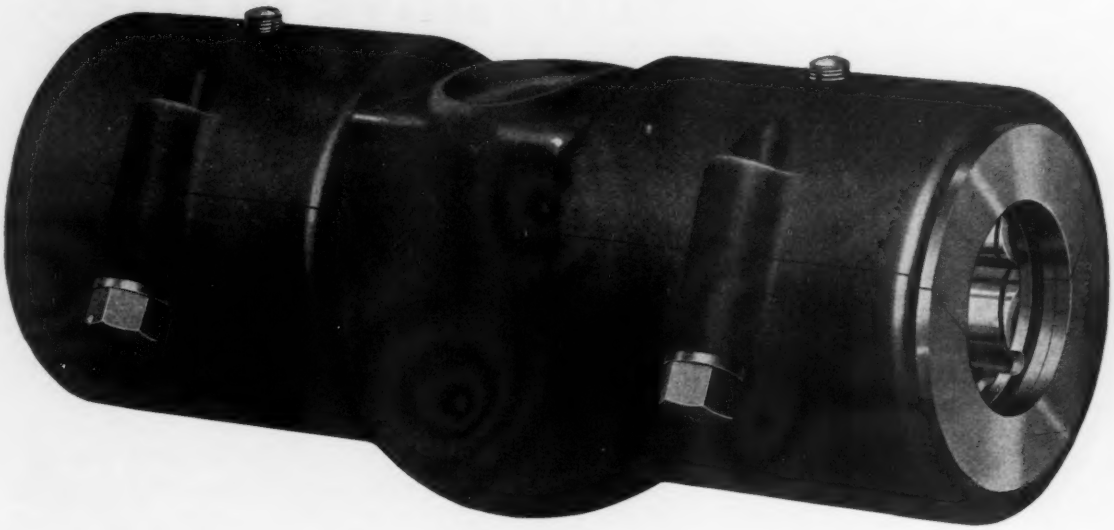
Courtesy: H. W. Butterworth & Sons Co.
Philadelphia, Pa.

Johnson Friction Clutches are used on the Butterworth Dye Jigs. The whole textile world knows that the house of Butterworth puts its seal of approval on nothing but the highest quality—whether in jigs or clutches. Likewise, the great Cheney silk works, South Manchester, Connecticut, the largest silk manufacturing company in the world, uses Johnson Clutches on Dye Jigs and other textile machinery.

PERFORMANCE is the big feature of the Johnson. Starts the moment you wish. Stops the instant you say. No slipping. No grabbing. Easily lubricated. Adjusted with a single screw. For reverse motion on Dye Jigs the Johnson Clutch is incomparable. Ask your engineering department to look into these facts and to report their recommendations. Equip with Johnson Clutches. Full data free.

Write for Catalog G.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.



NOW *a Hyatt line shaft bearing that will fit your* NARROW *hangers*

THE new narrow center Hyatt line shaft bearing, the result of 35 years of manufacturing experience, is now ready for distribution.

This replacement box fits all standard makes of hanger frames.

Simplicity and ease of installation have been maintained by retaining the split feature of the Hyatt box. Lower prices have been made possible by new manufacturing economies.

Ask your local mill supply dealer to show you the sample narrow center bearing and give you complete information about it.

This new, NARROW Hyatt bearing is available in the following sizes:

$1\frac{7}{16}''$ $1\frac{15}{16}''$
$2\frac{3}{16}''$ $2\frac{7}{16}''$
$2\frac{15}{16}''$

Complete details on Hyatt line shaft bearings and a list of satisfied users are given in Bulletin No. 130. Write for your copy today.

HYATT ROLLER BEARING COMPANY
NEWARK, NEW JERSEY

HYATT ROLLER BEARINGS FOR LINE SHAFTS

Service Results have proven the Low Service Cost of— WILLIAM'S BELTS

The William's Line of High Grade

LEATHER BELTING

COCHECO

Every inch of leather in Cocheco is choicest oak tanned, cut from the center of the butt. It is absolutely free from belly or shoulder leather, is strictly short lap, of heavy natural weight and fully guaranteed.

DEFIANCE

A good, heavy belt for straight drives and for even steady strains. Made from carefully selected side stock leather. Strictly short lap, pure oak bark tanned and made up with the same care as our Cocheco.

BUCKEYE

A very serviceable belt for light work only. It is cut from lower edge stock and made only in widths up to and including four inches. Meets the demand for a belt in narrow sizes at reasonable cost.

CAIRO

The heaviest and best shoulder belt made. Adaptable for use on low-powered machinery. It is pure oak tanned and well and carefully made. The price is extremely low.

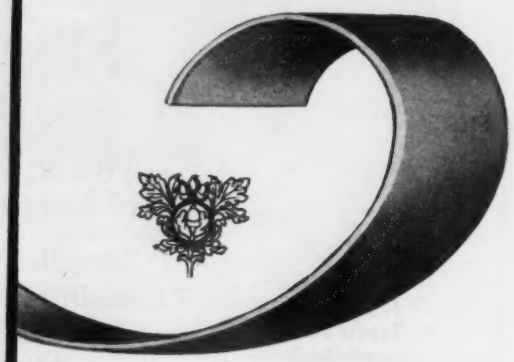
SHEDITE

The most perfect waterproof and steam-proof belt that belting science and skill can produce. It is strictly center stock belting and can be furnished in Heavy, Medium and Light weights.

Each grade of the William's line of Leather Belting is designed and built to give maximum service under given conditions.

The materials used are the best obtainable; the processing of demonstrated excellence; the finished product second to none.

Furthermore service results covering a period of 83 years have proven the low service cost of William's Belts.



Send for literature giving full particulars of the comprehensive Williams line of Leather Belting.

I. B. WILLIAMS & SONS.

Dover, New Hampshire, U. S. A.

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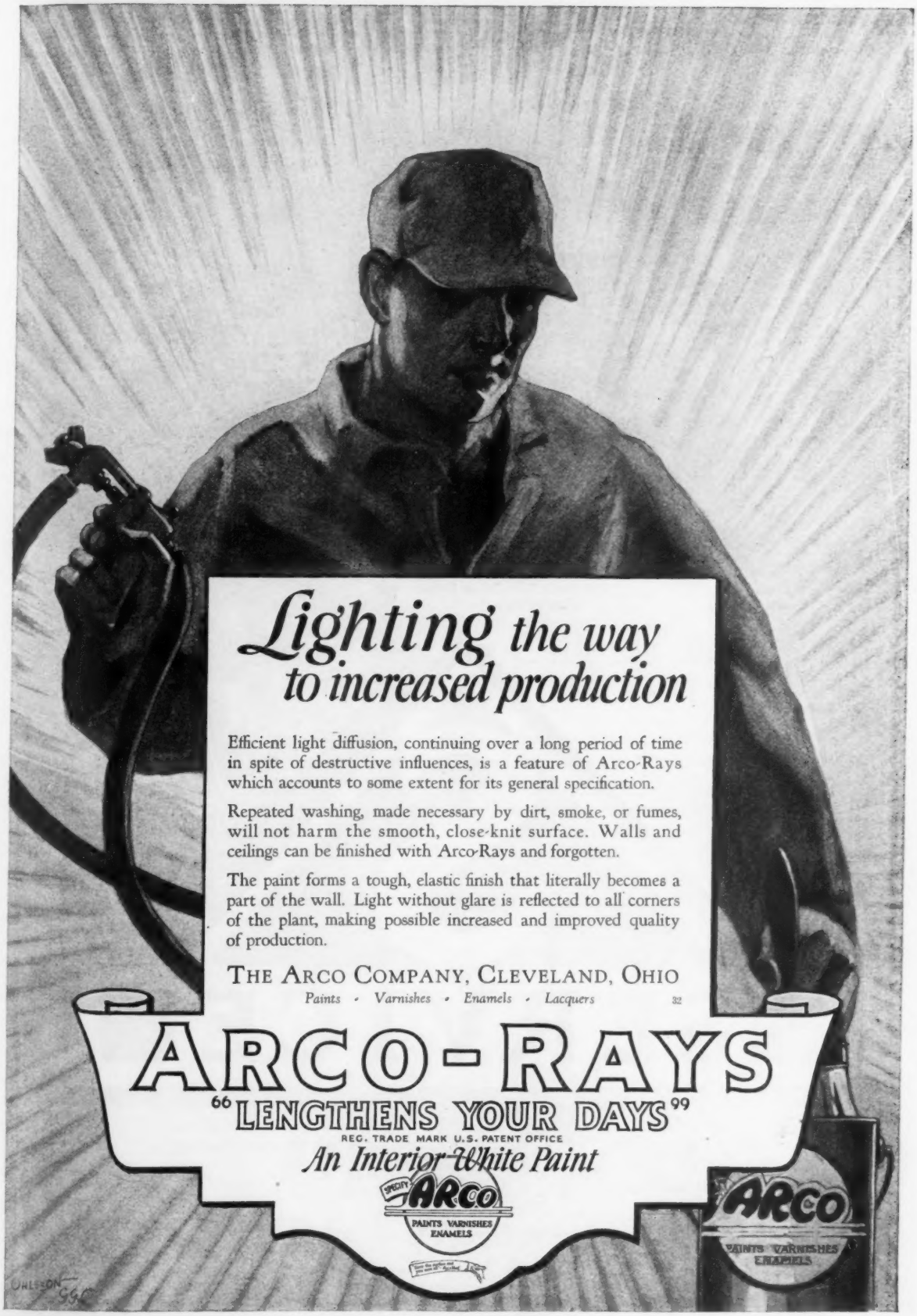

Lighting the way to increased production
Efficient light diffusion, continuing over a long period of time in spite of destructive influences, is a feature of Arco-Rays which accounts to some extent for its general specification.
Repeated washing, made necessary by dirt, smoke, or fumes, will not harm the smooth, close-knit surface. Walls and ceilings can be finished with Arco-Rays and forgotten.
The paint forms a tough, elastic finish that literally becomes a part of the wall. Light without glare is reflected to all corners of the plant, making possible increased and improved quality of production.
THE ARCO COMPANY, CLEVELAND, OHIO
Paints • Varnishes • Enamels • Lacquers
32
ARCO-RAYS
"LENGTHENS YOUR DAYS"
REG. TRADE MARK U.S. PATENT OFFICE
An Interior White Paint
SPECIFY ARCO
PAINTS VARNISHES ENAMELS
ARCO
PAINTS VARNISHES ENAMELS

THE COMPANY WE KEEP

IN BUSINESS, as in life, we are accorded the status of our associates.

Such a station cannot be maintained year after year unless the standards of the group are upheld and advanced through service to our associates.

Engineering is a profession of service. In the course of a quarter century, we have served nearly a thousand clients, many of them year after year as their business grew and expanded.

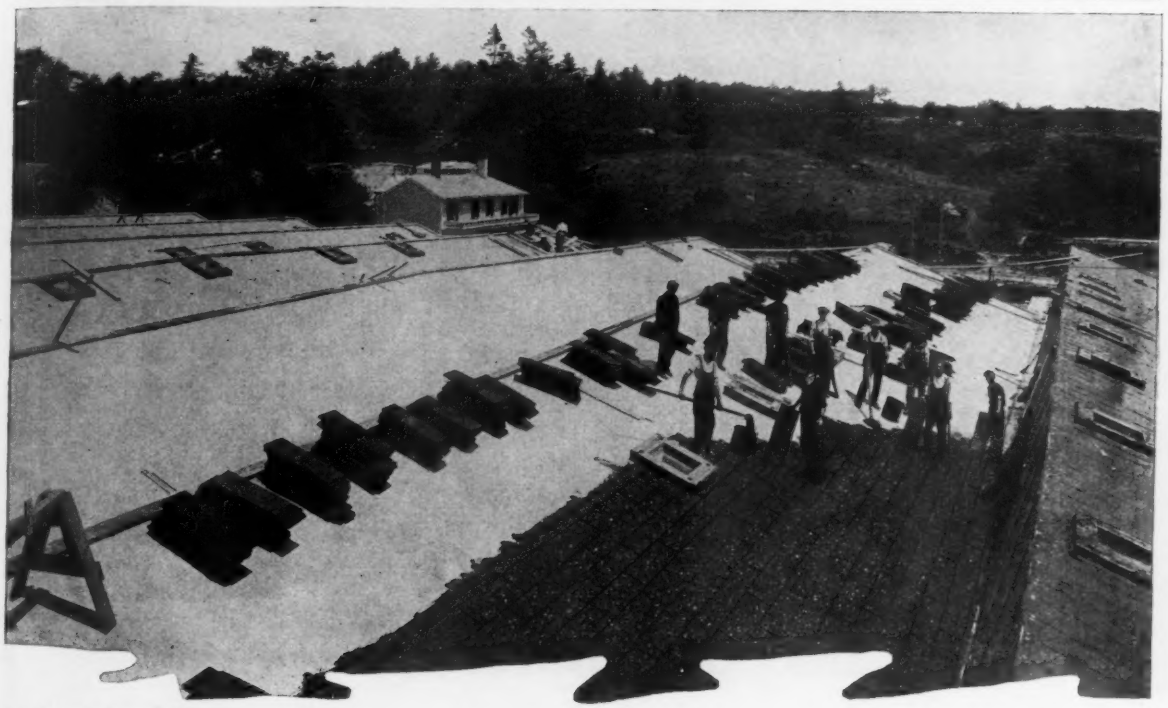
Our device, here shown in the company of the trade-marks of a few of this group of clients, is emblematic of our ideals of service and of our experience. These are better described in "Factories for the Future," a little book which you may have by asking for your copy.

J. E. SIRRINE & COMPANY
Engineers

Greenville
South Carolina

627 Tenn. Elec. Power Bldg.
Chattanooga, Tenn.

EVERY ROOF NEEDS INSULATION



Insulating dyehouse roof of Joseph Benn & Sons Company, Greystone, R.I., with Armstrong's Corkboard.

No Sweating Ceilings with Cork on the Roof

SWEATING on ceilings stops, absolutely and permanently, when roofs are properly insulated with Armstrong's Corkboard. The protective blanket of cork holds in the heat so effectively that the ceiling is kept from cooling down to the point where moisture will condense on the underside. Even in zero weather with high humidity, the sweating nuisance is eliminated entirely.

Armstrong's Corkboard not only reduces heat flow through the roof to a minimum, but it is the most practicable insulation made and is applicable to any type of roof without change in design. The convenient sized boards, 12 x 36 inches, are easily laid on wood or concrete decks, flat or sloping. The firm body of the corkboard provides a solid, permanent base for any standard roofing, which is applied over it in the regular way.

Armstrong's Corkboard is slow-burning and a fire-retardant. It will not ignite from sparks or embers and does not carry fire. Equally important, Armstrong's Corkboard does not take up moisture and will not buckle, swell or rot out.

Full information on the elimination of sweating by the use of Armstrong's Corkboard will be sent on request. Address Armstrong Cork & Insulation Company (*Division of Armstrong Cork Company*), 185 Twenty-fourth Street, Pittsburgh, Pa. In Canada, McGill Building, Montreal, Quebec. In London, Armstrong Cork Company, Ltd., Sardinia House, Kingsway, W. C. 2.

Trade Mark

Branches in the Principal Cities

Armstrong's Corkboard Insulation

for the Roofs of All Kinds of Buildings

Looking into the future—

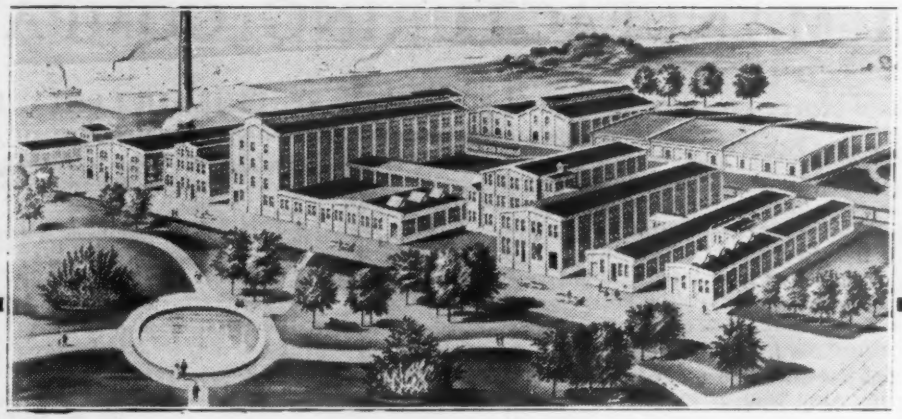
and solving all problems of plant expansion and providing for future needs is only a part of the engineer's work.

Selecting the proper location, determining the most suitable type of building, selecting the best building materials and supervising the construction is work that your engineer must do.

The engineer's ability to visualize and coordinate these requirements of his client makes his services a prerequisite to the proper solution of any engineering project.

We invite an opportunity to discuss your engineering problems with you.

ROBERT and COMPANY
INCORPORATED
Architects and Engineers
Atlanta, Georgia



Home of

Armour's 88% Textile Soaps!

Flint Shredded Soap Chips

A dependable high grade *tallow soap*. Commercially neutral — Guaranteed 88% Real Soap. Flint Shredded is used by hundreds of Woolen Mills for fulling and scouring.

Olive Oil Soap Chips

A dependable Olive Oil Soap Chip. Commercially neutral — guaranteed 88% Real Soap. Recommended for Silk—Knitting—Underwear—and Hosiery Mills, when a soap of this type is preferred.

Pure Palm Soap Chips

A dependable high grade vegetable oil soap. Neutral—Guaranteed 88% Real Soap. Recommended for fulling and scouring—when a vegetable oil soap is preferred.

Flotilla Soap Flakes

A dependable tallow and vegetable oil *white* soap chip. Commercially neutral—Guaranteed 88% Real Soap. For Hosiery—Knitting and Underwear Mills, for bleaching and scouring. The quality of the soap is insurance against the possibility of a yellow cast in the bleached and scoured article.

We Also Manufacture a Full Line of Textile Soaps Packed Solid in the Barrel

Red Oil	Blended Palm
Olive Palm	Olive Oil (bars)
Pure Palm	Olive Potash Fig

ARMOUR AND COMPANY

DEPARTMENT OF TEXTILE SOAPS
1355 West 31st Street, CHICAGO, ILLINOIS

KALI MANUFACTURING COMPANY

Chemists

1406-08-10 North Front St.: 1409-11 North Hope St., PHILADELPHIA, PA.

SPECIAL PRODUCTS

Hydroxy Art Silk Coning Oil—A specially prepared oil used for coning, winding, knitting and softening dyed or undyed artificial silk. It makes the silk knit easily—eliminating break-downs and reducing seconds. It washes out easily at low temperatures and therefore gives more even and brighter shades in dyeing and bleaching.

Hydroxy Wool Scouring Oil—For woolen piece goods and yarns. One part of this oil will carry into an emulsion five parts mineral or other oil used in batching and for this reason is superior to soap for woolens. It makes a clear solution and is not affected by hardness of the water; hence it will go further than soap and work better.

Hydroxy Boil-off Oil (For pure silk)—Degums piece goods and hosiery better than soap. Action is quicker produces softer goods, and secures better results.

Hydroxy Art Silk Scouring Oil—This oil will remove from artificial silk anything from kerosene to paraffine, which winders, knitters and weavers use to make the silk work easily; enabling the dyer to obtain even shades and bleach. Ordinary chemicals will not do this.

Kali Chlorine Neutralizer—Prevents tender bleached goods and makes the finished product whiter. It is a superior antichlor as it acts quicker on the chlorine, has bleaching properties of its own, does not liberate free sulphur and does not yellow the goods.

"Developene"—Rusty black stockings finished with this turn to a lustrous black. To demonstrate its effectiveness we shall be glad to receive stockings which have been dyed black and washed, but not finished, which we will finish with "Developene." "Developene" is made only by the Kali Manufacturing Co.

Hydroxy Fat Liquor—For tanning of fine skins.

Hydroxy Finishing Oil.

Hydroxy Kier Oil—Removes oils and waxes, producing more even bleaching and dyeing.

Hydroxy Para Soap—For dyeing Para Reds.

Hydroxy Silk Soap—For degumming skein silk.

Hydroxy Textile Oil—For wetting out, dyeing, softening and finishing. The highest grade made.

Hydroxy Throwing Oil—(Soluble neatsfoot) for throwsters' use in soaking silk.

Hydroxy Benzine Soap.

Turkey Red Oil—50% and 75%.

Kali Boil Salts—For use in kier.

Olive Silk Finish—For oxidized black.

English Fulling Oil—For fulling and scouring woolens.

Kali Detergent—For all cleaning purposes.

Sulphantine—Destroys last traces of sulphide of soda.

Fermentol—(Diastatic Enzyme)—For liquefying starch and converting into soluble products.

Kali Scroop—For silk, art silk and cotton.

Hydroxy Cutting and Drawing Compound—Paste for cutting threads.

Hydroxy Screw Cutting Oil—Soluble in water.

Disfectol (Registered)—Disinfectant, germicide, antiseptic and deodorant; soluble in water.

STANDARD CHEMICALS

Acetyphenetidin, U. S. P.
Acids.
Acetic Acid—Tech. 28%, 56%, 70% Carboys and barrels.
Acetylsalicylic Acid
Battery Acid
Benzoic Acid, U. S. P.
Carbolic Acid, Crystals or Crude (Phenol)
Citric Acid
Cresylic Acid—Dark
Dipping Acid—for brass workers
Etching Acid
Formic Acid
Hydrofluoric Acid—Carboys and Barrels
Lactic Acid
Muriatic Acid, Tech. and C. P. (Hydrochloric Acid)
Nitric Acid—Al strengths
Oxalic Acid
Phosphoric Acid — Tech. and U. S. P.
Pickling Acid—For cleaning castings
Pyroligenous Acid
Salicylic Acid — Powdered Preservative for size
Salicylic Acid—Sublimed
Salicylic Acid—U. S. P.
Salicylic Acid—from natural oil
Sulphuri Acid—Tech and C. P. (Oil of Vitriol)
Sulphurous Acid
Tannic Acid—Chrystals for discharge and resist work
Tannic Acid—Powdered for dyeing
Tartaric Acid

Alum—all kinds

Alumina
Acetate of Alumina
Sulphate of Alumina—Ground or lump—Tech. and iron free
Chloride of Alumina

Ammonia
Aqua Ammonia—All strengths Drums and Carboys
Acetate of Ammonia
Chloride of Ammonia (Sal Ammoniac)
Oxalate of Ammonia

Barium Chloride

Bleaching Powder

Boiler Corrective (Removes and prevents scale)

Borax—Lump and Powdered

Calcium Chloride

Carbon Bisulphide

Carbon Tetrachloride

Chrome Acetate

Chlorates
Sodium Chlorate
Potassium Chlorate

Copper Sulphate (Blue Stone)

Dextrine

Epsom Salt—U. S. P. and Tech. (Magnesium Sulphate)

Extracts—Hemetine, Logwood, etc.

Formaldehyde—U. S. P. 40% by volume

Gelatine—Sheets and Ground

Glauber's Salt—Crystal and anhydrous

Glucose

Glue—Sheets, Broken and Granular

Glycerine—Tech. and C. P.

Grape Sugar

Gums
Arabic
Tragacanth
Flexible Gum (for silk size)

Iron
Nitrate of Iron—By Copperas—Red Iron
Nitrate of Iron—True
Pyrolignite of Iron—Black Iron
Sulphate of Iron—Copperas

Lead Acetate (Sugar of Lead)
White—Crystals and Powder
Brown—Broken

Lime
Chloride of Lime—Bleach (Calcium Hypochlorite)

Oils
Cocoanut Oil
Neatsfoot Oil—Low acid test for Throwsters
Olipe Oil
Castor Oil, No. 3
Castor Oil, U. S. P.
Oil of Vitriol (Ful 66° Be')
Lard Oil
Lard Oil—Winter pressed
Oil of Wintergreen—Synthetic
Turkey Red Oil

Oxalate of Ammonia

Peroxide of Hydrogen

Potash
Carbonate of Potash
Caustic Potash
Bichromate of Potash.
Chlorate of Potash

Soaps
Palm Oil Soap
Red Oil Soap
Olive Oil Soap

Sal Ammoniac—Ground

Soda
Acetate of Soda—Tech.
Soda Ash, 58%
Bisulphite of Soda—40°
Bisulphite of Soda—Anhydrous (Powdered)
Caustic Soda—Ground, Flakes Fused and Solution
Chlorate of Soda
Bicarbonate of Soda
Bichromate of Soda

Hydrosulphite of Soda—Anhydrous (For discharging and dyeing)
Hypochlorite of Soda (Javelle water)
Hydrosulphite of Soda
Nitrate of Soda
Phosphate of Soda
Tri Sodium Phosphate
Sal Soda—Crystals (Carbonate of Soda
Silicate of Soda—42° Be'
Silicate of Soda—Heavy Syrup
Sulphate of Soda (Anhydrous Glauber's Salt, Dry Powder)
Sulphide of Soda—Crystals
Sulphide of Soda—Concentrated 60-64%
Sulphite of Soda

Soluble Oils—All grades

Soluble Wax

Soluble Blue (Bleacher's Blue)

Starch

Sulphonated Oils—All oils—Castor, Corn, Soya-bean, Neatsfoot, Fish, Cod, etc.

Sulphur—Roll, Flour, etc.

Sulphur Dioxide—in Cylinders

Tin
Bichloride of Tin, Stannic Chloride) 50° and 55° Be'
Tin Crystals (Stannous Chloride)
Tetrachloride of Tin (Stannic Chloride—Anhydrous)

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Turpentine

Potash
Bichromate of Potash
Permanganate of Potash, Tech. and U. S. P.
Red Prussiate of Potash (Potassium Ferrocyanide)
Yellow Prussiate of Potash (Potassium Ferrocyanide)

Zinc
Zinc Chloride—Fused
Zinc Chloride—Solution 30° and 42° Be'
Zinc Dust
Zinc Sulphate—Technical

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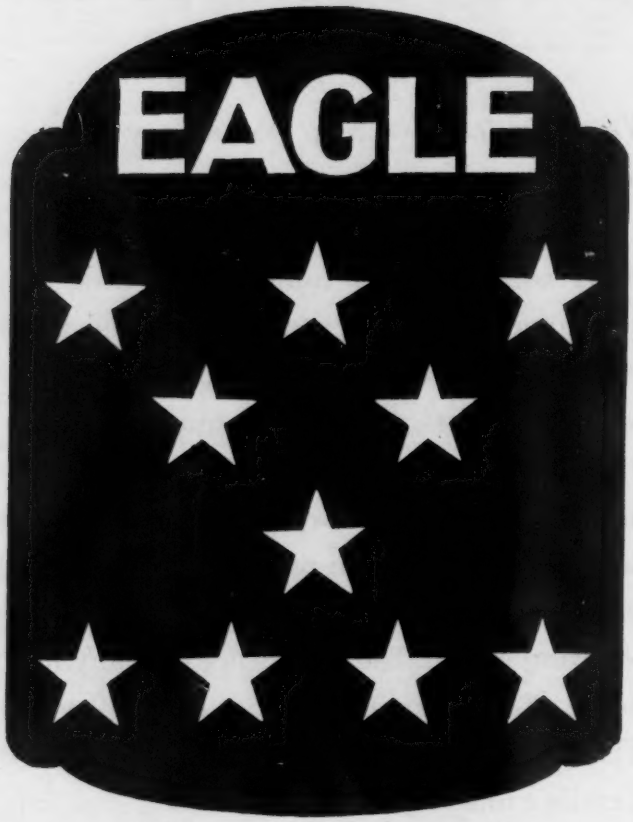

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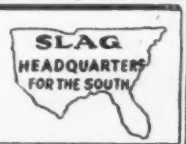

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L. L. ARNOLD, Editor. R. W. PHILIP, Associate Editor.

Editorial and Advertising Department, Grant Bldg., Atlanta, Ga. Subscription price, $1.00 per year; Canada, $1.50 a year; Foreign, $2.00 a fear. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The names of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change ni advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

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Volume 90 Member Associated Business Papers, Inc. Member Audit Bureau of Circulation. No. 1

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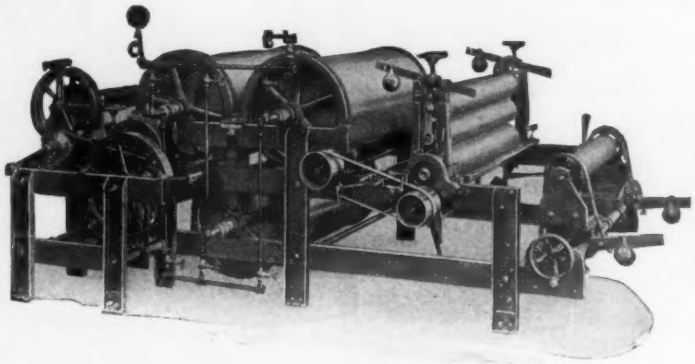

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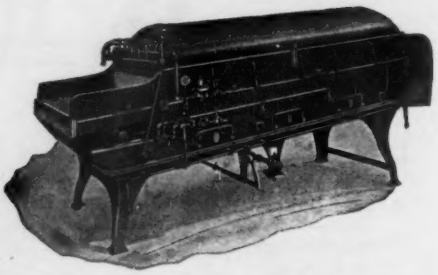

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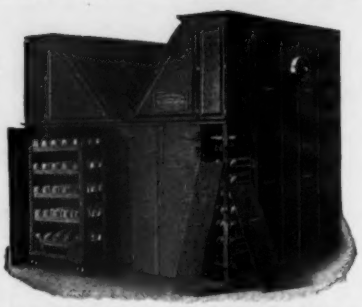

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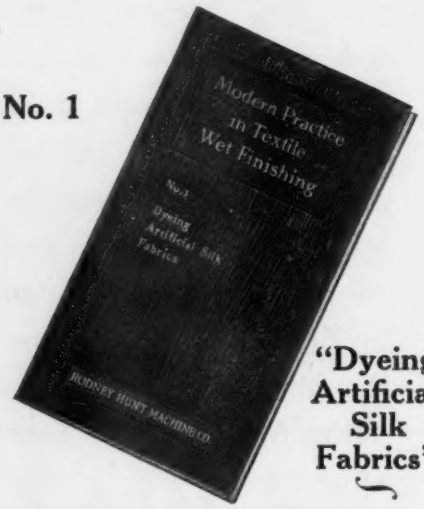

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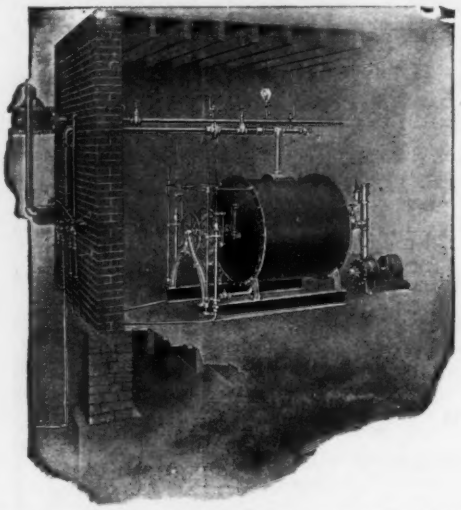

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Lykopon—Anhydrous Sodium Hydrosulfite for reducing indigo and vat dyes, for stripping, etc.

Formopon—Sodium Formaldehyde Sulfoxylate for discharge printing.

Indopon W—Indigo Discharge Assistant.

Formopon Extra—Basic Zinc Formaldehyde Sulfoxylate for stripping dyes.

Protolin—Soluble normal Zinc Formaldehyde Sulfoxylate for stripping dyes.

Protolin AZ—A special soluble Sulfoxylate for stripping dyes.

Our laboratory makes a special study of these products and their application, and appreciates the opportunity of co-operating with users in solving any problems which the employment of these products presents. Suggestions for stripping dyes from all classes of goods are supplied on request. We also manufacture in our own plants a wide range of Heavy Chemicals, including Acids, Sodium Sulfide, Glauber's Salt, Aluminum Sulfate, Aluminum Chloride, liquid and crystals, Tartar Emetic, etc.

Office
40 North Front Street
PHILADELPHIA

Factories
Bristol and Bridesburg, Penna.
Branches
Chicago, Ill. Gloversville, N.Y.
Boston, Mass.

CLINTON STARCH

Thick and Thin Boiling Starches of Highest Quality, Manufactured with Care and Precision, assuring the Utmost Satisfaction, together with Economy and Efficiency.

CLINTON CORN SYRUP REFINING CO.

CLINTON, IOWA

WOLF BRAND
Specialized Textile Chemicals

MONOPOLE OIL

Reg. U. S. Patent Office

The ideal textile oil for better results in Dyeing, Bleaching, Mercerizing and Finishing

TEXTILE GUMS
For Printing

BENSAPOL
For Removing Oil and Grease Stains

CREAM SOFTENERS
Neutral Sulphonated Cotton Softeners

HYDROSULPHITES
For All Purposes

ANTISTAIN

SOLUBLE OILS

GUMS
Arabic, Tragacanth, Karaya

JACQUES WOLF & CO

MANUFACTURING CHEMISTS AND IMPORTERS

PASSAIC, N. J.

Western Representatives: The Ciba Co., Inc.
590 Howard Street, San Francisco, Calif. 162 W. Kinzie Street, Chicago, Ill.

Why Not Specialize

There is just as much reason for textile mills to specify the use of those alkalies that prove most suitable to their needs, as there is for large steel consumers, to specify a certain quality of steel.

What specialization has done in the manufacture of steel products

Wyandotte Textile Alkalies

are doing in the manufacture of textiles.

These Wyandotte Textile alkalies represent the culmination of a series of successes and failures with various forms of alkalies extending as it has over a period of many years. They are completed products not merely laboratory tested, but practical successes, products which enable the textile manufacturer to obtain results in quality, in feel, in color impossible to obtain by the use of the ordinary alkali products. And they do this at no increased cost.

May we tell you why?
Order from your Supply House.

The J. B. FORD CO., Sole Mnfrs.
WYANDOTTE, MICH.

To Prevent

"Shiners"

(Tight Picks or "Chilly" Picks)

in

Rayon Weaving

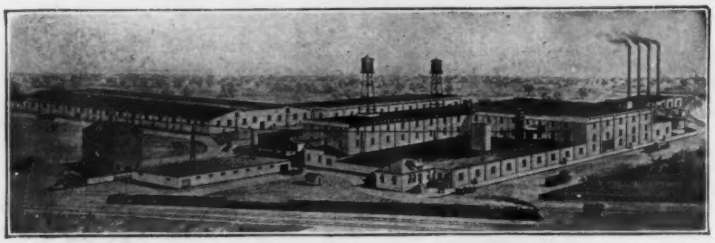
use

FORMULA 615

Apply to

Neutrasol Products Corp.
41 Park Row New York, N. Y.

(See other Ad on page 165)



VICTOR MILL STARCH

The Weaver's Friend

It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. DANIEL H. WALLACE, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience.

Uniform in Application

VICTROLYN

Reg. U. S. Pat. Off.

Penetrating, Lubricating, Dependable Assistant in Warp Sizing

KLORASENE

will remove Oil Stains.

If you are troubled, write us.

BOSSON & LANE

Manufacturing Chemists

ATLANTIC, . MASS.

Warren Soaps

Preferred Stock

The best quality tallow, palm, and red oils and olive foots, carefully balanced with the purest chemicals for your special purpose.

Uniformity guaranteed by test before shipment.

Warren Soap Warren Service

Warren Soap Mfg. Co.

Established 1870

77 Summer St. Boston, Mass.

Incorporated 1890

FOR BETTER SIZING
USE
ELASTIC SLASHER SIZE
MORE ECONOMICAL THAN OTHER STARCHES
SPIER, SIMMONS & CO., Inc.
474-478 GREENWICH ST., NEW YORK
SOUTHERN OFFICE: 250 IVY STREET, ATLANTA, GA.
BOSTON PHILADELPHIA TORONTO

RAYON SIZING FOR WARP
SKEIN OR SLASHER
ALL sizings bind the fibres, but if you wish to obtain in your Warp Ends, the two most essential characteristics, *Elasticity and Flexibility*, you must use
WASOL M-21
DISCHARGES IN PLAIN WATER
Neutrasol Products Corporation
See other ad on page 163. 41 Park Row New York

Sandoz
SANDOZ ANILINE DYES for ALL TRADES
XYLENE LIGHT RED 2 GL
Unsurpassed fastness to light and excellent level dyeing properties recommend this color for combinations with our
Xylene Light Yellow 2G
Alizarine Light Blue B
Alizarine Light Blue SE
Alizarine Light Blue R
Alizarine Light Blue BGA
SANDOZ CHEMICAL WORKS
INCORPORATED
New York, 238-240 Water Street
Paterson, N. J., 6 Smith Street
Philadelphia, 12 South Front Street
Charlotte, N. C., 435 South Church Street
Boston, 36 Purchase Street
Providence, R. I., 813 Hospital Trust Bldg.

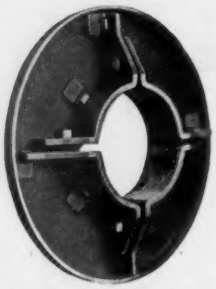
ROLLER CALF
A superior product in texture and finish that will assure long wear and perfect satisfaction.
The result of 60 years' experience in tanning fine leathers.
We will gladly send samples on request.
R. NEUMANN & CO.
Hoboken, N. J.

All Steel Loom and Section Beam Heads

Cannot Break
Do not Bend

"ALL STEEL" LOOM BEAM HEAD
"SEMI-STEEL" GEAR
PATENT PENDING

"ALL STEEL" SECTION BEAM HEAD
PATENTED



"ALL STEEL" ADJUSTABLE HEAD
SPLIT OR SOLID TYPE
PATENT PENDING

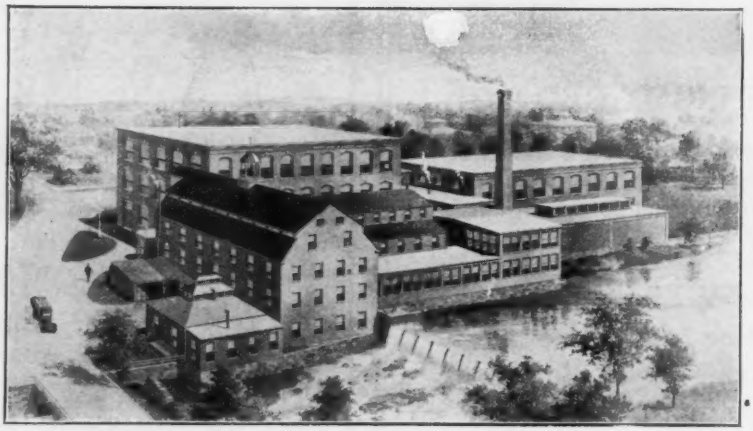
DUPLICATE YOUR CAST IRON HEADS IN STEEL—ELIMINATE ALL BREAKAGE
MAKE YOUR BEAM HEAD INVESTMENT PERMANENT

Mossberg Pressed Steel Corporation

Attleboro, Mass.

Southern Office: 101 Augusta St., Greenville, S. C.

Fifty-Two Years Doing One Thing Well



Whitinsville Spinning Ring Company

Whitinsville, Mass.

Specialists since 1873.

Southern Agent
W. P. DUTEMPLE, Charlotte, N. C.

We are prepared to fill your requirements in

AUTOMATIC BOX LOOMS

for the following fabrics

Cotton Goods
Wide Silks
Woolens
Men's Wear

Blanket (wool or cotton)
Satinet
Towels
Dress Goods (worsted or cotton)
and many others

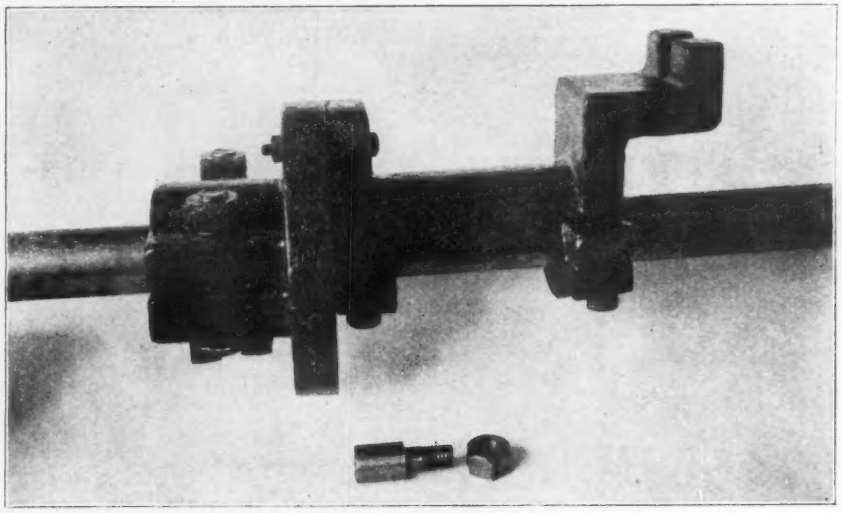
CROMPTON & KNOWLES LOOM WORKS

WORCESTER, MASS. U.S.A.

PROVIDENCE, R.I. PHILADELPHIA, PA. PATERSON, N. J.

S. B. ALEXANDER, Southern Manager
Charlotte, N. C.

The Aldrich Lap-Head RELEASE for Pickers



AldricH MachinE WorkS

Greenwood, South Carolina

When Buying Card Clothing

think of the raw materials of which it is made.

Only the best cloths are used in our foundations and thoroughly tested for tensile strength.

Our wire is of even temper and made from only the finest Swedish rods.

Consider well these very important facts before buying.

"The life of the clothing tells the story"

Heddles for Weaving

Hand Stripping Cards

Strickles for Grinding

Howard Bros. Mfg. Company

ESTABLISHED 1866

Branches:
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Worcester, Massachusetts

SLACK SELVAGES

on section beams are entirely eliminated when the

SLACK SIDES PREVENTOR

is applied to your Warper.

Over 400 sets now in use in the United States.

Send for a sample set.

J. C. BLACKHURST,

61 Clara St. New Bedford, Mass.

Patented and sold all over the world.

No wonder they're popular

Met-L-Wood Trucks are *selling*. More mill men are turning to them all the time. Personally we think it is only logical. Take the truck illustrated above for instance. What dyer or finisher *wouldn't* like it? Met-L-Wood construction—in this case monel metal on the inside, rims and corner plates plus a wood panel for lightness plus galvanized steel on the outside. Durability—try and match it. It's five or six ordinary trucks in one. Plenty of protection for goods in process—monel metal to prevent off-shades—a surface that a sheer piece of goods revels in.

We ask you—who wouldn't like it? Get the Met-L-Wood line in book form. Write today.

"MET-L-WOOD" CORP., 2421 WEST 14th ST., CHICAGO, ILL.

Trucks that are "slam-bang" proof

MET-L-WOOD "ARMORD" TRUCKS

OUR HIGH SPEED AUTOMATIC LOOM

IS BEING BOUGHT BY SOME OF THE EARLIER PURCHASERS OF THE ORIGINAL AUTOMATIC LOOM.

THEY WERE RIGHT THEN AND WE BELIEVE THAT THEY ARE RIGHT NOW.

HOPEDALE MFG. CO.

MILFORD, MASS.

Southern Office at Greenville, S. C.

"SONOCO"
SONOCO PRODUCTS CO.
HARTSVILLE, S. C.
"SONOCO"
CONES, TUBES AND CLOTH-WINDING CORES
FOR ALL REQUIREMENTS
SONOCO PRODUCTS CO., Mfr., Hartsville, S. C.
EASTERN OFFICE, 410 OLYMPIA BUILDING, NEW BEDFORD, MASS.
CANADA: W. J. WESTAWAY CO., Ltd., HAMILTON, ONT.

Old Machines Made Newly Productive

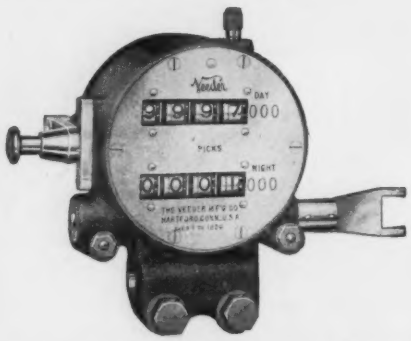
You put in new improved machines to get more output from operatives; lower costs.

You get more output from *all* machines—and lower costs—by putting on Veeder Counters.

You get the records that really show what each machine *can do;* what each worker *should* do. And by showing up the production-record, you consistently make it show up *well* on

Veeder COUNTERS

Below is shown the Duplex Loom Pick Counter, which embodies *two* regular Veeder Pick Counter mechanisms in a single case, for two-shift operations.



The double dial indicates separately the output of day and night operators. When running two shifts, you need take readings but *once a week*—same as when using a single counter on the one-shift plan. Saves clerical work and confusion. Write for textile counter booklet showing the "Duplex" and many other specialized textile counters.

The Veeder Mfg. Co.

6 Sargeant Street, Hartford, Conn.

Representatives:

Carolina Specialty Co., Charlotte, N. C.

E. E. Lovern, Newnan, Ga.

SAVE ON SPOOLS

Did you ever stop to think of the amount of yarn wasted from broken and splintered spools? Every broken spools means a yarn wastage amounting from forty to sixty cents per spool. This has been the trouble for years, causing an enormous loss of money to textile mills.

Many spools have been designed to overcome this—many of them are successful, but the Smil-Bob Spool has perfected a spool that gives satisfaction, not only in the saving of yarn wastage, but also in longer spool life, smoother operation and freedom from trouble.

Smil-Bob Indestructible Fibre Head Spools cannot be surpassed in construction. Their smooth, hard, vulcanized red fibre heads will not break, ship, splinter, or come off. The specially selected hardwood barrel precision turned which assures a perfect balance and true running throughout its long life.

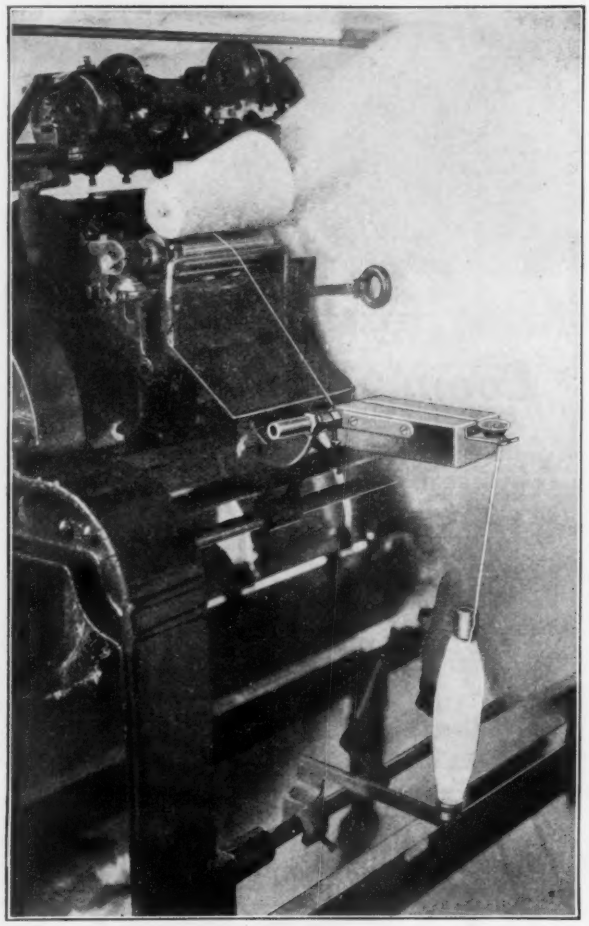
Smil-Bob Spools will put an end to your spool trouble. Investigate it today.

L. C. SMITH BOBBIN WORKS
PHILLIPSBURG, N. J.
Exclusive Selling Representative:
THE HELBURN THOMPSON CO., Salem, Mass.

Southern Office: 201 Augusta St. Greenville, S. C.

Northern and Export Office: 18 Goodhue St., Salem, Mass.

Indestructible SMIL-BOB Fibre Head SPOOLS



The Truth About Slubs

It does not require inventions to make slubs, but often they are made, and that is another story.

We wish to tell you that the Eclipse Cotton Yarn Cleaner is sure death to slubs. The Eclipse Cleaner not only catches all the slubs but thoroughly removes all the dirt in the yarn.

Many knitting mills and spinning plants realize the extreme value of the Eclipse Cleaner, and are equipping their entire winding capacity with the Eclipse Cleaners. The basic principle of good knitting and weaving is thoroughly clean yarn.

Why make yourself believe you are getting the best results when you can absolutely improve your yarn with the Eclipse Cleaner?

The Eclipse Cleaner is easily attached to your winder. It does not add any additional cost to your winding costs. Upon request we will cheerfully give you a demonstration.

Eclipse Textile Devices, Inc.

Elmira, N. Y.

Makers of

Automatic Yarn Cleaner, Automatic Stop Motion, Yarn Tension Device, Eclipse Van Ness Dyeing Machine for random dyeing cotton yarn on cones.

The New Electric Way

Scrubs Cleaner —Costs Less!

"We formerly used seven hand scrubbers for one mill. Now we use four men and scrub two mills. The results are much better than we got by hand." writes the superintendent of a mill in Charlotte, N. C.

The FINNELL SYSTEM of Electric Scrubbing raises the standard of cleanliness and at the same time lowers cleaning costs. Its direct results are cleaner floors. Indirectly it reduces soilage and spoilage and improves morale of workers. It pays for itself quickly.

If you have not had a demonstration, ask for one.

If you want further facts, write for our latest booklet, "Your Questions Answered by Users."

FINNELL SYSTEM, INC.

(Established 1906)

District Offices in Principal Cities

511 COLLIER STREET HANNIBAL, MO.

Power Scrubbing Headquarters for Nineteen Years

FINNELL SYSTEM

OF ELECTRIC SCRUBBING

"Clean Floors Reflect Clean Business"

Since 1888 reliable humidifying devices.

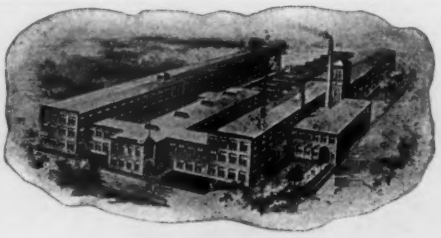
also

Better Textile Dryers

Manufactured by GRINNELL COMPANY, Inc.

American Moistening Co.

Atlanta	Boston	Charlotte
Georgia	Massachusetts	North Carolina



GREIST

Loom Drop Wires

We specialize on DROP WIRES—Plain, Coppered, Nickel Plated, Rust Proof.

Submit samples or drawing for immediate quotation by wire. Special attention to quick deliveries.

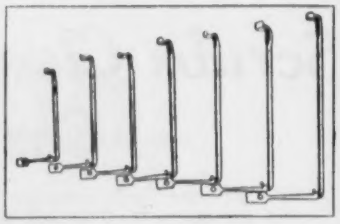
THE GREIST MFG. CO.

NEW HAVEN, CONN.

Southern Representative

JAMES McCABE, Box 573, Greenville, S. C.

Textile Men Tell Us



That our Flyer Pressers perform their duty efficiently, economically and in perfect harmony with the other part of the machinery. That they are a factor in operation, increasing capacity and reducing maintenance cost.

If you haven't used our Flyer Pressers now is a good time to begin.

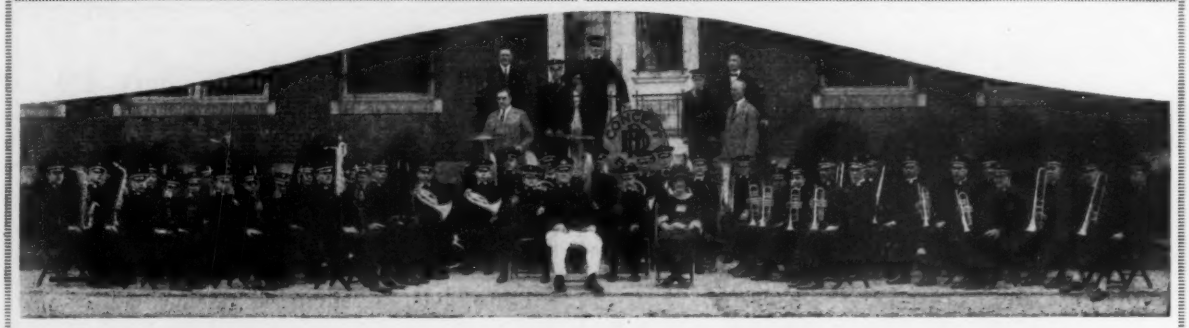
Southern Spindle & Flyer Co., Inc.

Manufacturers, Overhaulers and Repairers of Cotton Mill Machinery

CHARLOTTE, N. C.

W. H. MONTY, Pres. and Treas. — W. H. HUTCHINS, V. Pres. and Sect.

You All Know This Box



"Music Interprets the Democracy of Life"

This is our General Catalog Tone Topics. 32 pages beautifully illustrated in full colors. It is free to band leaders, instructors, and purchasing agents interested in buying band equipment. Send for your free copy.

"The value of music in industry consists not so much in a cash appraisement as in a growing harmonious morale.
The value to the people who toil is the inspiration it brings and the buoyancy of spirit it awakens.
Music does this thing. And the reason is that it lifts people to higher levels of thinking and appreciation. Music is an art that interprets the democracy of life. The deepest expressions of the soul have been set to music. And music has aroused people to decision and action when other appeals have failed. And no concerted form of musical arrangement is surer or more capable of arousing this spirit than the Concert Band of full instrumentation."

Thus writes Prof. Joseph Venzetti, Conductor of the Riverside and Dan River Cotton Mills Concert Band in a recent letter to the Buescher Company. He has been training industrial bands for years and is more and more convinced of their great benefit to the morale, the comradeship, and the working capacity they bring to any Factory organization.

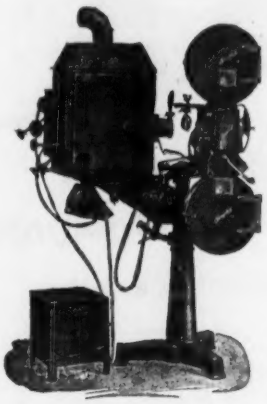
We invite the opportunity to ship to responsible parties, any instrument or instruments selected from our catalog for 6 days' free trial. This is our way of showing the quality of our merchandise and proving to the beginner that he can learn to play. With Saxophones we give 3 lessons free with each new instrument.

First, on your letterhead, write for your copy of the General Catalog "Tone Topics No. 25." Or if you are interested in some particular brass instrument, say which, and we will send special literature and complete details of our Free Trial, and Easy Terms proposition. No obligation. Do this today.

BUESCHER BAND INSTRUMENT COMPANY

Everything in Band and Orchestra Instruments

1269 Buescher Block, Elkhart, Indiana



SOLE SOUTHERN DISTRIBUTORS Simplex PROJECTORS

Satisfied Employees Mean Greater Efficiency

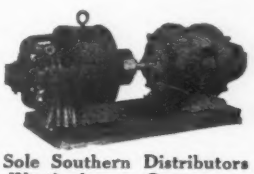
Entertainment for the employee is one of the biggest problems you are confronted with today. When they are satisfied they are efficient in their work and will do almost twice as much when their confidence is once gained. This can be accomplished by installing a moving picture theatre.

The Simplex Projector has proven very popular in the textile industry because it is the simplest machine on the market to operate. Only takes two hours to learn the mechanism and other details.

Our service department will be glad to help you plan your theatre and install the complete equipment ready for operation.

We carry a complete line of theatre equipment and supplies including Minusa Screens, National Carbons, Hakilu Cement, Westinghouse Motor Generator Sets, and many other supplies for the modern theatre.

Write today for our special plan to textile mills.



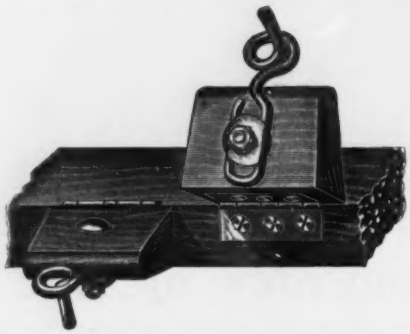
Sole Southern Distributors
Westinghouse Generators

Theatre Supply and Equipment Co., Inc.

102 Walton St., Atlanta, Ga.

Simplex Motion Picture Projectors

The Palmer Adjustable Thread Guide



For Ring Spinning and Twisting Frames

Easily Adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut

Robert Hall & Sons, Bury, Ltd., BURY, ENGLAND

Makers of all classes of Looms, Preparing and Finishing Machinery for Cotton, Woolen, Linen, Jute, Asbestos, Silk, Ramie, etc.

Complete plants of Weaving Machinery for Woven Driving Belts, Hosepipes, Sailcloth and Duck, Motor Tyres, Asbestos Brake Linings, Turkish Towels, Sponge Cloths, Calico, Fustian, Velvets, Plushes, Carpets of all sorts, Horsehair, Hair Cloth, Needlework and Embroidery Canvas, Smallwares, etc.

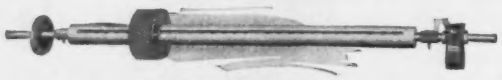
Complete lists of machinery made supplied on application.

Double Plush and Velvet Looms on most modern Principle.

1868 **1925**

57 YEARS

Specialists in Grinding Machinery for Textile Mills



Traverse Wheel Grinder

Roller Grinder

Having specialized in this class of machinery, building nothing else whatever, the **Roy Grinders** have become standard throughout the trade.

"Insist on the Roy"

B. S. ROY & SON COMPANY

Established 1868

WORCESTER, MASS.

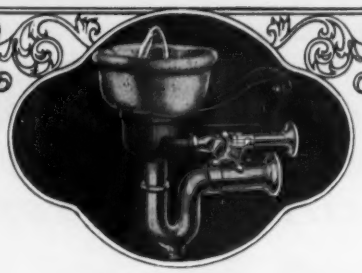
AMERICAN SUPPLY COMPANY

PROVIDENCE, R. I.

Manufacturers of

LOOM HARNESS,
WEAVING REEDS,
OAK TANNED LEATHER
BELTING, STRAPPING,
ETC.

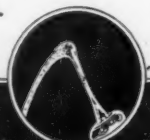
We make a specialty of Harness for Warp Drawing Machines



This is No. 600

It's a wall-type fountain favored in industrial circles. And it's a Halsey Taylor, which means it's the most sanitary for the workers. Halsey Taylor Drinking Fountains come in varied types for every purpose. Each has automatic stream control and two-stream projector—health-promoting features found only in Halsey Taylor fountains. It costs no more to buy the best. Write!

The Halsey W. Taylor Co.
Warren, Ohio



HALSEY TAYLOR *Automatic Stream Control*
DRINKING FOUNTAINS

AMTEX
TRADE MARK REGISTERED

The Superiority of "AMTEX" TAPE

is evidenced by the ever increasing demand for it by Southern Spinners. They have found there is economy in using only tapes of superior quality.

The building of tapes in any special size you desire is our specialty.

AMTEX Tapes are guaranteed to give absolute satisfaction.

Prices quoted on receipt of your specifications.

Manufactured by
AMERICAN TEXTILE BANDING CO., INC.
Germantown, Philadelphia, Pa.
Sold in the South by
CHARLOTTE SUPPLY CO.,
Charlotte, N. C.

"AMTEX" Spinning Twisting and Spooler Tape

PERKINS Practical Brush

Sweeping Clean—

is no longer a problem for textile mills.

They have found that floors can be kept much cleaner and great savings can be made in the cost of labor and materials by using our No. 142 and our No. 241 Floor Sweeps. Because of the size and shape of these brushes, they are able to do three times the work of a broom, and will outlast four brooms.

Textile mills the country over are replacing inferior scrubbing brushes with Perkins Practical Floor Scrubs. Our No. 48 Floor Scrub is ideal for mill usage because it reaches every nook and corner of the building.

Our absolute guarantee of perfection in workmanship and satisfactory service stands behind every sweep and scrub we make. Write for prices.

**These figures are taken from an actual experiment. Name of mill will be supplied upon request.*

ATLANTA BRUSH CO.
ATLANTA, GA.

Guaranteed Textile Brushes

A Year Round Necessity

Consider your workmen. The harder they work the thirstier they become. Clear, fresh, cool water for drinking purposes is a year 'round necessity. Install Rundle-Spence Vertico-Slant Drinking Fountains. Increased production always results.

Lips can't touch the R-S nozzle. Sanitation is assured. The slight slant stream prevents water from falling back upon the jet. The spread of contamination through lip-contact is positively eliminated.

All types of sanitary Drinking Fountains, Bath and Plumbing Supplies and Fixtures are included in the R-S line. Write for catalog with prices, specifications, and complete information.

Rundle-Spence Mfg. Co.

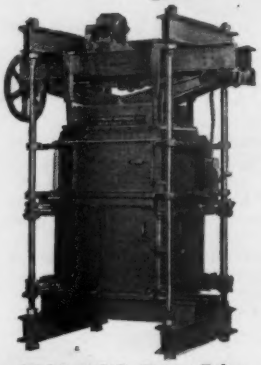
57 Fourth St., Milwaukee, Wis.

RUNDLE-SPENCE

LOGEMANN

Hand - Belt - Electric - Hydraulic

Baling — Presses



Model 26-MS. Power Baler specially designed for export yarn baling.

For Waste—
Hand-operated Balers—
Deep-box power Balers—
Hydraulic Balers—

For Finished Goods—
Hand-operated Balers—
Power toggle-lever Balers—
Hydraulic High - density Balers—

For Yarns—
High-density power Balers—

There is a LOGEMANN baler for every purpose.
Write for details specifying your needs.

LOGEMANN BROTHERS CO.
Main Office and Works:
3102 Burleigh St. Milwaukee, Wis.

Approximately 1,500,000 Barrels "Royal Cement" Shipped Into Southeastern States Last Year

DIXIE PORTLAND CEMENT CO. ROYAL CHATTANOOGA, TENN.

Is tested in our laboratory every 60 minutes. The quality of our product is only equaled by our service in the handling of large jobs.

DIXIE PORTLAND CEMENT CO.
CHATTANOOGA, TENN.

VOGEL

PATENTED

Frost Proof Closets

350,000 giving satisfaction. Save Water; Require no Pit; Simple in the extreme. The most durable water closet made. In service winter and summer.

Enameled Roll flushing rim bowls.
Heavy Brass valves.
Strong, hardwood seat.
Galvanized tank.
Malleable seat castings will not break.
Tested under hydraulic pressure before leaving factory.

ASK YOUR JOBBER

JOSEPH A. VOGEL CO.
WILMINGTON, DELAWARE

Serving Industrial Georgia with General Electric Products

TO give service that is second to none is as important to us as to supply our industrial customers with materials that are unsurpassed in quality. In the interest of prompt shipments, we maintain a complete stock of General Electric and other standard lines in our Atlanta and Savannah warehouses. Every order taken from our enormous stock is shipped the day it is received.

For twenty years, many of Georgia's industrial plants have depended, without a single instance of disappointment, on Carter Service for their electrical requirements.

CARTER ELECTRIC CO.

Distributors

Atlanta **Savannah**

Having Difficulty with Electrical Problems?

Through our past experience in handling elec-electrical installations for lighting and power in the textile mills, we are in position to handle any electrical problem you may have. No installation too small—none too large.

Service

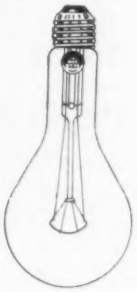
The ability of our staff to render service is unexcelled. Our policy is to see that every installation is given the utmost in economy and permanent satisfaction, and this is the main reason you find so many of our installations in the textile industry today.

A trained staff of electrical engineers are maintained for the benefit of assisting you in the solution of your electrical problems, in the most economical and satisfactory way—send them to us—no obligations.

R. H. BOULIGNY, nc.

Contracting Electrical Engineers

27 West First St., Charlotte, N. C.



Kentucky Lamps

Make night work hours as productive as daytime hours.

To the employee running a press, lathe, knitter or loom, proper light in day time as well as night time is an essential part of his equipment. Give your employees proper light, night and day and watch production increase.

Kentucky Lamps give that degree of satisfaction in lighting qualities that many an employee has long wished for. They are guaranteed to give satisfaction.

Kentucky Lamps are supplied in all standard sizes.

Prices and information sent on request.

Manufactured by

KENTUCKY ELECTRIC LAMP CO., INC., OWENSBORO, KY.

Southern Distributors

AMERICAN ELECTRIC LAMP CO.,

176 Spring St., Atlanta, Ga.

Youngstown Pipe

Is thoroughly good pipe. It is made by one of the largest tube manufacturers in the world and backed by more than twenty years of satisfactory service in all parts of the United States. Your jobber has it. Ask him for it on your next order.

The Youngstown Sheet & Tube Company

YOUNGSTOWN, OHIO

District Sales Offices

BOSTON—Massachusetts Trust Bldg.
NEW YORK—Hudson Terminal Bldg., 30 Church St.
PHILADELPHIA—Franklin Trust Bldg.
ATLANTA—Healey Bldg.
PITTSBURG—Oliver Bldg.
CLEVELAND—Union Trust Bldg.
DETROIT—First Nat'l Bank Bldg.
CINCINNATI—Union Trust Bldg.
CHICAGO—Conway Bldg.
ST. LOUIS—Mo. State Life Bldg.
DENVER—First Nat'l Bank Bldg.
DALLAS—Magnolia Bldg.
SAN FRANCISCO—Sharon Bldg.
SEATTLE—Central Bldg.
KANSAS CITY, MO.—Commerce Bldg.
MINNEAPOLIS—Andrus Bldg.
NEW ORLEANS—Audubon Bldg.

Light—Your most valuable equipment

Daylight costs nothing and is the finest equipment any mill can possess.

ZEMCO-LITE will turn the interior of your mill into the great light of the outdoors; such light has a tendency to keep your employees happy and contented, and contentment in an organization is valued in dollars and cents.

ZEMCO-LITE is widely known and many of the larger textile mills have adopted it as their standard wall coating.

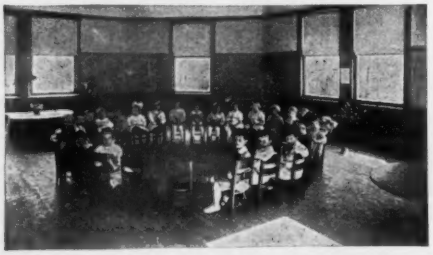
It is made from White Portland Cement and as soon as applied hardens and becomes a part of the wall. Will not color, crack, chip or break off.

Write today for information.

American Cement Paint Co.
Chattanooga, Tenn.

Zemco-lite
TRADE MARK

"The Cement Paint"



Solves Textile Flooring Problems

in mills—schools—community halls

Cleanliness and health protection are vital factors in mills—schools or community halls—but these cannot be attained with softwood floors, as they sliver and splinter, catching and holding dirt and germs.
This is not true with hard maple floors—their hard surface provides no lodging place for dirt and they become smoother with age. Easily kept clean—they dry quickly after scrubbing.
For mills—schools or community halls, there is no better flooring than "Chief Brand" Maple.

Send for complete information today.

KERRY & HANSON FLOORING CO., GRAYLING MICH.

"CHIEF BRAND" HARDWOODS

Still Young at the Age Many Executives Retire—

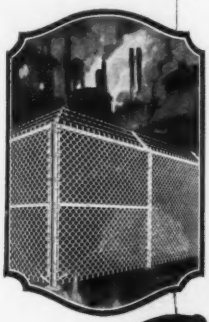
Conserved Efficiency!

Time always wins. But, any executive who chooses can prolong his business years. The secret, executives agree, is in conserving executive efficiency by simplifying administrative detail and eliminating wearing annoyances.

Cyclone Fence, enclosing industrial property, accomplishes these things. It prevents interference with property from the outside — stops trespass, theft, vandalism. It is an aid in systematizing factory and grounds. Places property under complete control day and night. Reduces worry, work, waste.

Cyclone Nation-Wide Service— Complete Responsibility

Cyclone Service is a complete, highly developed fencing service. From the time your order is placed until fence is erected, the Cyclone Fence Company assumes complete responsibility for every detail of the manufacture and installation of Cyclone Fence.



Phone, wire or write nearest offices.

CYCLONE FENCE COMPANY

Factories and Offices: Waukegan, Ill. Cleveland, Ohio, Newark, N. J., Fort Worth, Texas. *Pacific Coast Distributors:* Standard Fence Co., Oakland, Calif. Northwest Fence & Wire Works, Portland, Ore.

Branch offices in principal cities. Look in your telephone book for our local address.

Cyclone Fence

"Galv-After" Chain Link

We also manufacture Wrought Iron Fence

Cyclone "Red Tag" Fence and Products

The Mark of Quality Fence and Service

PROPERTY PROTECTION PAYS

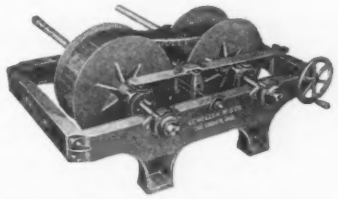
Lewellens change speeds smoothly

Get speed changes this way -not this way

WHEN you want two machines to operate in perfect synchrony—a Lewellen Variable Speed Transmission's the thing; it gets speed variations down to a fraction of a revolution.

When you want to change any machine's speed, **glide** from one speed to the other, don't **jerk** as you must without a Lewellen.

Lewellens change speeds smoothly. An important thing in paper bills. Want to talk to a thoroughly trained transmission man, or would you rather read the descriptive matter? Just say which and we'll send either!



The Lewellen seven features:

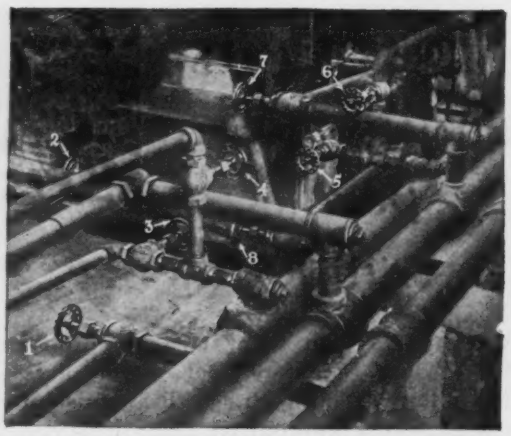
1. Every bearing a ball bearing.
2. Accurate and minute adjustment—locks in place at desired setting.
3. Extra heavy frame.
4. Stronger discs.
5. Specially designed durable belt.
6. Adaptable for floor wall or ceiling mounting.
7. May be equipped with hand, remote or automatic control.

LEWELLEN Variable Speed TRANSMISSION

Lewellen Manufacturing Co.

Columbus, Indiana

C11-E-RTG



Jenkins Bronze Globe and Angle Valves on piping to dye jigs, Bellman Brook Bleachery.

1. *Pond Water Supply.*
2. *Well Water Supply.*
3. *Steam for boiling*
4. *Closed coil steam line for process work.*
5. *Steam for boiling*
6. *Closed coil steam line for process work.*
7. *Well water supply.*
8. *Pond water supply.*

On lines to dye jigs

Fig. 106
Screwed, Jenkins Standard Bronze Globe Valve.

In the new dye house of the Bellman Brook Bleachery, Fairview, N. J., Jenkins Valves are the standard choice. The men responsible for the selection of equipment realize the value of reliable valve service in maintaining even dyeing, and guarding against "off-shades."

20 Years at Bellman Brook

Back in September, 1905, a number of Jenkins Valves were installed in the power plant then being erected. Today these valves are still in service and good for years to come.

Standardize on genuine Jenkins Valves, for genuine valve economy as Bellman Brook does.

For practically every valve requirement in the power plant or the mill proper. At supply houses everywhere.

Fig. 108
Screwed, Jenkins, Standard Bronze Angle Valve

JENKINS BROS.

80 White Street ------New York, N. Y.
524 Atlantic Avenue-----Boston Mass.
133 No. Seventh Street, Philadelphia, Pa.
646 Washington Boulevard, Chicago, Ill.

JENKINS BROS, Limited,
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

"Cut Consumption of Belting Fully 40%"

THE HOME COTTON MILLS, St. Louis, Mo., tried out *Moccasin* Bushings in troublesome bearings in their plant with the following results:

HOME COTTON MILLS
Second & Barton Sts.
Branch of
Bemis Bros. Bag Co.
St. Louis, Mo.,
June 27, 1923.

Moccasin Bushing Co.,
20th & Chestnut Sts.,
Chattanooga, Tenn.

Dear Sirs:—

Yours of the 22nd enclosing memo. of purchase from you in 1919 of 200 Moccasin Bushings received. Believe we have had more than this number from you as all of our loose pulleys in the spinning room are equipped with them which includes several sizes for each frame. We are well pleased with the results we are getting from the use of this Bushing as they have entirely eliminated the hot pulley, reduced the consumption of oil and, we believe, have cut down our consumption of belting in the spinning room fully 40%.

Yours truly,
WGY-M HOME COTTON MILLS,
(Signed) W. G. Young, Manager.

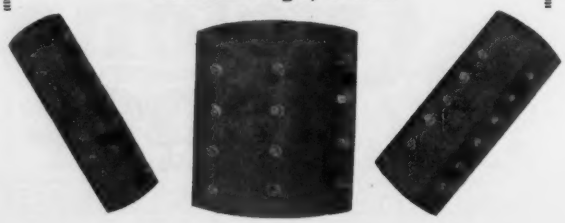
Hundreds of other textile mills are having equal results.

Begin now and equip all your loose pulleys, machine spindles and all other running journals with

Moccasin Bushings

Moccasin Bushing Co.

Chattanooga, Tenn.



Commission Merchants, Yarn Dealers, Cotton Dealers and Brokers, Banks, Etc.

ESTABLISHED 1872

Henry Beer — Roy E. Barkdull
C. Morgan Abrams — Adrian F. Aitkens
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PRIVATE WIRES TO NEW YORK, CHICAGO AND THROUGHOUT THE COTTON BELT

H. & B. BEER

325 BARONNE ST., NEW ORLEANS, LA.

Cotton — Grain — Stocks — Bonds Provisions — Cotton Seed Oil — Rice — Sugar and Coffee

MEMBERS OF

New Orleans Cotton Exchange
New York Cotton Exchange
New York Stock Exchange
New York Coffee & Sugar Exchange, Inc.
New York Produce Exchange
N. O. Future Brokers' Association
New Orleans Stock Exchange
Chicago Board of Trade
Associate Member of Liverpool Cotton Association
Associate Member of New York Curb Market Association

Our daily Cotton Market Letter sent on request.

ORDERS EXECUTED ON ABOVE EXCHANGES

Main Office: 325 Baronne St.
Branch Office: 821 Gravier Street
PHONES MAIN 6272-6276

J. B. JAMIESON CO.

COTTON YARNS

77 SUMMER ST. BOSTON, MASS.

J. L. BUSSEY & CO.

GREENVILLE, S. C.

Cotton Merchants and Brokers

WOODWARD, BALDWIN & CO.

DRY GOODS

Commission Merchants

43-45 WORTH STREET, NEW YORK

HUGHES FAWCETT

IMPORTER AND COMMISSION MERCHANT

LINEN YARNS
For Weaving, Knitting and all Purposes.

TURKEY RED YARNS
For Towel Borders, Towellings and Bleaching Cloth

Linen Jacquard Harness Twine
And Every Description of Linen Thread and Twine

115 Franklin Street, : NEW YORK

Weimar Bros.

Phone Connections

Works: 2046-48 Amber Street, PHILADELPHIA, PA.

MANUFACTURERS OF

Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

Where Southern Hospitality Flowers

The South's Supreme Hotel

600 rooms, each with private bath, circulating ice water and famous Bowman service.

Single — $3.50, $4.00, $5.00

Double—$6.00, $7.00, $8.00

Golf privileges extended to Biltmore guests.

Where the Business Leaders Of the South Find A Congenial Environment

As the activities of the business world quicken and increase with the approach of the Fall and Winter seasons, the Biltmore Hotel becomes host to the South's business leaders.

Its ample and modern facilities for service; its complete appointments; its atmosphere of quiet dignity and refinement, provide a congenial environment for men of consequence in the business world.

Conventions and other business gatherings will find an appreciative understanding of their requirements at the Atlanta Biltmore with every convenience and facility immediately at their disposal.

The Atlanta Biltmore is ideally located just outside the zone of downtown traffic noises, and yet within a few minutes ride of the theatrical and business districts of the city.

HOLLAND B. JUDKINS, Vice Pres. & Manager.
WILLIAM C. ROYER, Associate Manager.
Write for Booklet "C"

Hotel Lincoln

Indianapolis Indiana

Management R. L. MEYER

Conveniently located in the heart of Indianapolis, Washington Street (National Trail) at Kentucky Avenue.

Two Blocks from the Union Station, One Block from Traction Depot, with Motor Bus Station on Same Block.

Every room, regardless of price, has—Tub or Shower Bath; Free Electric Fan; Circulating Ice Water; Double Bed; Easy Chair and Reading Lamp; Wooden Light-proof Transom, and every possible modern convenience and comfort feature.

Hotel Lincoln has 400 well ventilated outside guest rooms. There are no court rooms.

RATES AT HOTEL LINCOLN

40 Rooms at $3.50 for one; $4.00 for two; shower bath.
40 Rooms at $3.75 for one; $4.25 for two; shower bath.
30 Rooms at $3.00 for one; $4.50 for two; shower bath.
30 Rooms at $3.00 for one; $5.00 for two; tub bath.
75 Rooms at $3.50 for one; $5.50 for two; tub bath.
60 Rooms at $4.00 for one; $6.00 for two; tub bath.
375 Total.

30 Rooms at $4.50 for one; $6.00 for two; tub bath.
45 Rooms at $4.50 for one; $6.50 for two; tub bath and twin beds.
15 Rooms at $6.00 for one; $8.00 for two; tub bath; twin beds.
5 Rooms at $8.00 for one; $8.00 for two; parlors.
30 Rooms at $5.00 Large Sample.
400 Total.

There is but one price. Rates are posted in every room.

LINCOLN CLUB SERVICE

Any time you are in Indianapolis for a few hours and want to rest or clean up, visit room 431, and enjoy fully as a guest of the management, free of charge, this spendid Club and Valet Service. Pullman porters in charge. Baths, shoe shining, valet service, writing and rest room. A real service that has made Hotel Lincoln famous in the hotel world.

Hotel Tuller

DETROIT

800 Rooms — 800 Baths

$2.50 per Day and up

ARABIAN RESTAURANT
GOTHIC GRILL
CAFETERIA
TEA ROOM
FOUNTAIN SERVICE

JOHN H. STEWART, Gen. Mgr.

J.H. LANE&CO.

Tire Fabrics — Cord Fabric
Enameling Duck — Wide Drill
Sheeting — Osnaburg

Special Constructions
Cotton Fabrics

250 W. 57th St.
NEW YORK

223 West Jackson Boulevard
CHICAGO

Callaway Mills

INCORPORATED

345 Madison Avenue
NEW YORK

"Selling Agents for Southern Mills"

Unity Cotton Mills
Milstead Manufacturing Co.
Elm City Cotton Mills
Manchester Cotton Mills
Hillside Cotton Mills
Unity Spinning Mills
Villa Rica Cotton Mills
Athens Manufacturing Co.
Atlanta Cotton Mills

Boston Representative
M. R. ABBOTT,
110 Summer Street

Chicago Representative
RAY T. JOHNSON
226 W. Adams Street

Akron Representative
L. A. WATTS, Second National Building

Southern Friends Always Welcome

To serve you in the spirit of hospitality that has made the South so famous is our constant desire. It is a rare pleasure to make travelers from the South comfortable at the Sinton.

HOTEL SINTON—CINCINNATI

Accommodations for 1200 guests. Every room with Bath and Servidor
JOHN L. HORGAN, Managing Director

Hotel Belleclaire

COMFORT

The first duty of a hotel to its guests. So the Hotel Belleclaire is chosen by the visitor to New York, as well as by those metropolitan residents who know how essential to good living are airy sleeping and living rooms, hospitable service and quiet refinement. And the Belleclaire is close to everywhere.

Room and bath $4 a day and up.

Rates and specific information if you will write.

BROADWAY AT 77TH ST.
NEW YORK

Classified Advertising

RATES

DISPLAYED

"For Sale" and all other advertisements using bold face type or otherwise displayed, $2.00 per inch per insertion.

Rates for larger spaces furnished on application.

WITHOUT DISPLAY

"Positions Wanted" 3 cents per word per insertion. Minimum charge $1.00. Payable in advance.

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

(When replies are to be received in our care, allow four words for box address.)

WANTED

Practical man with college training desires position as superintendent or assistant superintendent. Experienced, capable and will show by results that job will be sincerely appreciated. Address Box 230, c/o COTTON, Grant Bldg., Atlanta, Ga.

WANTED:—Position as Superintendent of Cotton Mill, or Overseer of Large Weave Room. American. Married. Age 42. Twenty-five years experience in all Departments of mill. Four Years Supt. Seven years Overseer Weaving, Slashing, Winding, Warping, Twisting and Finishing. Good References, Change on thirty days Notice. Not afraid to tackle Anything. Address Box 229, c/o COTTON, Grant Bldg., Atlanta, Ga.

FINANCE

We might help Textile Manufacturers who need additional Capital and whose condition warrants investigation. Address in strict confidence.

CARRUTHERS AND MINOR
177 State St., Boston, Mass.

Cost Accountant

37 years of age, married, with 15 years practical experience in office and mill, thoroughly familiar with machinery and handling of help, desires to change position with view of getting into a larger field. No job hunter. Would prefer to connect with concern which operates a chain of mills. Can install practical cost system and organize production control. At present employed. Correspondence invited under "Confidential," care "COTTON," Grant Bldg., Atlanta, Ga.

FOR SALE

2—Complete, Modern, Hydro-Electric Units, consisting of S. Morgan Smith Wheels and 150 K.V.A. Electric Machinery Company Generators and Exciters. Write for detailed specifications. Inspection invited. Reasonably priced.

Reynolds Wire Co.
Dixon, Ill.

NAPPER MACHINE

Wanted napping machine, state maker's name, if double acting, how many rolls, size of rolls, kind of bearings, condition of clothing, where can be seen and name lowest cash price. Box 231, care of COTTON, Grant Bldg., Atlanta, Ga.

FOR SALE

Eight—H Model Draper Spoolers, 130 Spindles each.

HANNAH PICKETT MILLS,
Rockingham, N. C.

POSITION WANTED

Married man, twenty-eight years of age, desires position as Cloth Room Overseer in grey mill. Thoroughly experienced and now employed in like capacity in one of the largest plants in the South. Good reasons for desiring change. References furnished. Box 232, c/o "COTTON," Grant Bldg., Atlanta, Ga.

New and Second Hand

ENGINES

Corliss Automatic and Slide Valve

BOILERS

Pumps, Hoisting Engines, Gas and Gasoline Engines.

MACHINE TOOLS

Lathes, Planers, Shapers, Drill Presses, etc.

WOOD WORKING

Planers, Molders, Band Saws, etc.

ELEC. MACHINERY

Dynamos and Motors

AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,
127-31 N. Third St.,
Philadelphia, - Pennsylvania

Do You Want to Sell It?

Probably you, like many other mills, have some equipment which you have taken out, or are thinking of taking out and replacing with new equipment.

Why not dispose of this second-hand machinery at a profit? COTTON is read by thousands of Cotton Mills that are hardly touched by Northern journals.

You Can Sell Your Second-Hand Equipment

to these mills through advertising in the Classified Advertising Section of COTTON. Such advertising produces results at small cost—why not try it out and get that second-hand equipment off your hands in a profitable way? Tell us what you have for sale and let us insert an advertisement for you.

COTTON

GRANT BUILDING **ATLANTA, GA.**

Ready To Use

No Reconditioning Required---Prompt Shipment. Save Money. Investigate these Excellent Condition Used Equipment Offerings

CENTRIFUGAL PUMPS

2—2½" Type A American Centrifugal pumps.
2—3" Type I American Centrifugal pumps.
2—3" Type C American Vertical.
5—3" Baker Centrifugal pumps.
48—4" Baker Centrifugal pumps.
6—5" Goulds Centrifugal pumps.
41—6" Baker Centrifugal pumps.
1—8" Type S Allis-Chalmers.
6—14" Type S Allis-Chalmers.
5—14" Worthington Class B Double Suction.
6—16" Type S Allis-Chalmers.

BOILER FEED PUMPS

5—8" 3-stage, type B, Alberger Centrifugal boiler feed pumps, with 181 H.P. steam turbines.

STEAM PUMPS

1—Worthington D fire pump, size 12 x 6 x 10.
1—Worthington 6 x 4 x 6 horizontal duplex.
3—Worthington 5¼ x 4¾ x 5 duplex.
2—Worthington 6 x 5¾ x 6 duplex.
32—Worthington 6 x 2½ x 6 duplex.
1—Worthington 7½ x 8½ x 6 duplex.
1—Smith-Vaile 20 x 10 x 18 duplex.
1—Worthington 12 x 18 x 12 x 12 compound duplex.
1—American Marsh simplex 6 x 3⅝ x 8.
3—Worthington 14 x 20 x 7½ x 18 tandem compound duplex hydraulic pumps.
6—Worthington 25 x 18 x 4⅝ x 24 Tandem compound duplex hydraulic pumps.

FANS

5—No. 4 Buffalo Baby Conoidal fans.
1—No. 3 Buffalo Niagara Conoidal fan.
8—No. 6 Buffalo Niagara Conoidal fans.
8—No. 7 Buffalo Niagara Conoidal fans.
1—No. 8 Buffalo Niagara Conoidal fan.
1—No. 9 Buffalo Niagara Conoidal fan.

BLOWERS

1—Sturtevant No. 3 Volume Blower.
1—No. 4 Buffalo "B" Volume Blower.
1—No. 1 American Blower.

EXHAUSTERS

1—80" Buffalo Standard reversible mill exhauster.
35—No. 1 Buffalo exhausters, with Backus water motors.
1—No. 7 Buffalo "B" Volume exhauster.
3—No. 4—24" Buffalo High Pressure gas exhausters.

GAS ENGINES

1—15 H.P. Novo gas engine.
3—10 H.P. Novo gas engine.
1—6 H.P. Stover gas engine. All in good running condition.

SCALES

1—5-ton Howe truck scale, 7 x 14' platform, registering beam.
1—Standard Dormant scale, 48 x 56" platform, 6000 lb. capacity.
5—Howe No. 207 "Flour" Scales, 21 x 29" platform, capacity 1000 lbs. Has foot lever device for raising center of platform.
4—Howe 60-ton scales, 18'x8' platform.
3—Howe 100-ton scales, 24'x8' platform.

MOTORS

Alternating Current, 3 phase, 60 cycle.

2—Slip Ring G.E. 7½ H.P., Type I, 440 Volt, 900 r.p.m.
31—A.C. 7½ H.P. Type 13D, 440 volt, 1200 r.p.m.
3—Slip Ring G.E. 10 H.P., Type I, 400 volt, 900 r.p.m.
1—Slip Ring G.E. 15 H.P. Type I, 400 volt, 900 r.p.m.
4—West., 30 H.P., Type CS, 440 volt, 1200 r.p.m.
13—Slip Ring G.E., 40 H.P., Type MT 336Y, 440 volt, 1200 r.p.m.
2—Slip Ring West., 40 H.P., Type CW, 440 volt, 1200 r.p.m.
1—Slip Ring, G.E., 50 H.P., Type MT 346, 440 volt, 900 r.p.m.
1—West., 75 H.P., Type CS, 440 volt, 1800 r.p.m.
5—G.E., 75 H.P., Type I, 440 volt, 720 r.p.m.
1—West., 150 H.P., Type CS, 2200 volt, 1800 r.p.m.
2—G.E., 300 H.P., Type I, Form K, 2200 volt, 1200 r.p.m.

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in following sizes:

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2½" C.I. Std. Gate, Screwed.
2½" C.I. Std. Globe, Screwed.
3" C.I. Std. Gate, flanged and screwed.
4" C.I. Std. Gate, screwed.
5" C.I. Std. Globe and Gate, screwed.
6" C.I. Std. Globe and Gate, flanged and screwed.
8" C.I. Std. Gate and Globe, flanged and screwed.
10" C.I. Std. Gate, flanged and screwed.
12" C.I. Std. Gate, flanged and hub.
14" C.I. Std. Gate, flanged.
16" C.I. Std. Gate, flanged.
18" C.I. Std. Gate, hub.
20" C.I. Std. Gate, hub and flanged.
36" C.I. Std. Gate, flanged.

Also many special valves, fittings, etc.

STEEL TANKS

50—2'2¾" x 3'4" x 3' with or without agitators, Cap. 165 gal.
10—2'6" x 3'3" Vertical Open, Cap. 119 gal.
2—4' x 8' Horizontal Double Riveted Pressure (60 lbs.) Cap. 750 gal.
1—4' x 12' boiler with coils. (60 lbs.) Bolted Head, Cap. 1158 gal.
2—4' x 18' Horizontal Pressure (80 lbs.) Cap. 1692 gal.
21—4'3"x4'10" Vertical Open, Cap. 510 gal.
32—4'6" x 24' Horizontal Pressure (80 lbs.) Cap. 2855 gal.
10—6' x 24' Horizontal Pressure (60 lbs.) Cap. 5120 gal.
10—7' x 36' Horizontal Pressure, Cap. 10365 gal.
9—7'4" x 7'10" Vertical (Bolted Top) Cap. 2340 gal.
25—8' x 6' Vertical bolted top, dished bottom, Cap. 2256 gal.
23—9'6" x 9'6" Vertical (Agitated) Cap. 5120 gal.
3—10' x 10' Dorr Re-Action, with agitators and steam coils, Cap. 5872 gal.
28—12' x 8'6" Vertical 4' Cone Bottom, Cap. 3720 gal.
22—20' x 12' Vertical storage, Cap. 28200 gal.

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2—300 H.P. Heine Water Tube Boilers, 160 lbs. pressure.
12—823 H.P. Babcock & Wilcox Stirling Water Tube Boilers, Class M-30, 200 lbs. pressure. Westinghouse stokers, forced draft fans, Vulcan soot blowers and all accessories.

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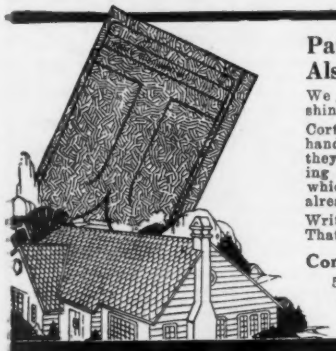

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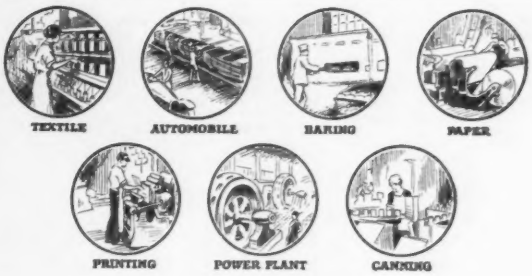

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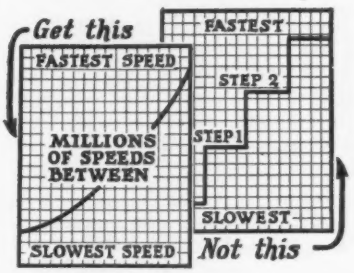

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(See Stamps, Stencils, etc.)

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Saco-Lowell Shops.
Textile Finishing Machinery Co., The.

CORKBOARD.
Armstrong Cork & Insulation Co.

CORK COVERED ROLLS.
Armstrong Cork & Insulation Co.

COPPING MACHINERY (SILK).
Eastwood, Benjamin.
Lazenby & Co., Inc., F. A.

CORPORATION FINANCE (TEXTILE).
American Trust Co.
Textile Banking Co.

CORRUGATED SHEET STEEL.
Ryerson & Co., Inc., Jos. T.

COST SYSTEMS.
Ernst & Ernst.
Loper & Co., Ralph E.

COTTON CLEANING AND AERATING MACHINE.
Murray Company, The.

COTTON FANS.
(See Blowers.)

COTTON YARN AND CLOTH COMMISSION MERCHANTS AND DEALERS.
Aberfoyle Mfg. Co.
Boger & Crawford.
Callaway Mills.
Fawcett, Hughes.
Greene, Hamilton & Co.
Hunter Mfg. & Comm. Co.
Jamieson, J. B.
Judson Mills.
Lane & Co., J. H.
Quissett Mill.
Weimar Bros.
Woodward, Baldwin & Co.

COTTON MERCHANTS AND BROKERS.
Beer & Co., H. & B.
Bussey & Co.
Cooper & Griffin, Inc.

COTTON WAREHOUSE AND COMPRESS.
Piedmont Bonded Warehouse & Comp. Co.

COTTON MACHINERY AND SUPPLIES.
Atlanta Harness & Reed Mfg. Co.
Atwood Machine Co.
Barber-Colman Co.
Briggs-Shaffner Co.
Butterworth & Sons, H. W.
Chapman Electric Neutralizer Co.
Cocker Mchy & Foundry Co.
Crompton & Knowles Loom Works.
Dinsmore Mfg. Co.
Draper Corporation.
Easton & Burnham Mch. Co.
Eclipse Textile Devices, Inc.
Fales & Jenks Mch. Co.
Fletcher Works.
Foster Machine Co.
Greenwood Loom Reed Co.
Greist Mfg. Co.
Hall & Sons, Robert, Bury, Ltd.
Harris Co., Geo. W.
Holcombe Textile Equipment Co., Inc.
Hopedale Mfg. Co.
Howard Bros. Mfg. Co.
Hunt Machine Co., Rodney.
Jacobs Mfg. Co., E. H.
Lazenby & Co., Inc., F. A.
Lestershire Spool Mfg. Co.
Manufacturers Machine Co.
Met-L-Wood Corp.
Mills Devices Co.
Mossberg Pressed Steel Corp.
Myers, L. H.
Parker Co., Walter L.
Phila. Drying Mchry. Co.
Proctor & Schwartz, Inc.
Root Co.
Roy & Son, B. S.
Sargent's Sons Corp. C. G.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield Co., Wm.
Shambow Shuttle Co.
Sipp Machine Co.
Smith Bobbin Wks., L. C.
Stafford Co.
Southern Spindle & Flyer Co.
Steel Heddle Mfg. Co.
Textile Machine Works.
Terrell Machine Co.
Textile Finishing Machinery Co.
Tite Lock Harness Hook Co.
Tolhurst Mch. Wks.
U S Bobbin & Shuttle Co.
Veeder Mfg. Co.
Walraven Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.
Wicaco Screw & Mch. Wks.
Wickwire-Spencer Co.
Wilson Bros. Bobbin Co., Ltd.
Woonsocket Mch. & Press Co.

COTTON TAPE LOOM.
Fletcher Works.
Schaum & Uhlinger.

COTTON YARN MILLS.
(See Yarn Manufacturers.)

COTTON WAREHOUSE.
Piedmont Bonded Warehouse & Comp. Co.

COUNTERS—REVOLUTION, HANK, PICK, ETC.
Root Co.
Veeder Mfg. Co.

COUPLING—SHAFT.
Dodge Mfg. Co.

COVERING—ROLLER.
(See Roller Covering.)

CRABBING MACHINES.
Hunt Machine Co., Rodney.

CRANES.
(See Hoists.)

CRAYONS.
Lowell Crayon Co.

CREOSOTED FLOORING, BLOCKS, POSTS, SHINGLES, ETC.
Southern Wood Preserving Co.

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(See Thread Cutters.)

CUTTERS—THREAD.
(See Thread Cutteers.)

DELIVERY CASES.
(See Boxes—Packing.)

DESKS—OFFICE.
Allen-Ivan-Marshall Co.

DEXTRINES.
(See Dyestuffs and Chemicals.)

DIAL SCALES
(See Scales.)

DIES—STEEL.
(See Stamps, Stencils, Etc.)

DIE STOCKS.
(See Pipe Threaders.)

DIRECTORY—TEXTILE BLUE BOOK.
Davison Pub. Co.

DICTIONARY.
Merriam Co., G. & C.

DOBBY CHAINS.
Crompton & Knowles Loom Wks.
Whitin Machine Works.

DOBBY CARDS.
Jacobs & Co., E. H.

DOFFING BOXES—MILL.
(See Boxes—Mill.)

DOFFER FILLETS.
(See Fillets.)

DOFFING CARS.
(See Cars.)

DRAFT DAMPER REGULATOR
Hardeman, Isaac.

DRAWING FRAMES.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.
Woonsocket Mch. & Press Co.

DRESSING MACHINERY.
Davis & Furber Mch. Co.

DRILLS—ELECTRIC.
Carter Electric Co.
Clark, Jr., Electric Co., Jas.
Independent Pneumatic Mchry. Co.
Ryerson & Son, Inc., Jos. T.
Walraven Co.
Westinghouse Electric & Mfg. Co.

DRINKING FOUNTAINS.
(See Fountains—Drinking.)

DROP WIRES.
Draper Corp.
Greist Mfg. Co.
Mossberg Pressed Steel Corp.
Steel Heddle Mfg. Co.

DRYING APPARATUS.
American Moistening Co.
Buffalo Forge Co.
Carrier Air Conditioning Co.
Manufacturers Machine Co.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Sturtevant Co., B. F.

DRYING MACHINERY AND EQUIPMENT.
Alsop Engineering Co.
American Laundry Mchry. Co.
American Moistening Co.
Butterworth, H. W., & Sons Co.
Cocker Mch. & Fdry. Co.
Manufacturers Machine Co.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Textile Finishing Machinery Co., The.
Tolhurst Machine Works.

DUST COLLECTORS.
(See Blowers and Blowing Systems.)

DUSTING MACHINERY.
Proctor & Schwartz, Inc.
Schofield & Sons, Wm.

DYERS, BLEACHERS AND FINISHERS.
Aberfoyle Mfg. Co.
American Yarn & Processing Co.
Boger & Crawford.
Dixie Mercerizing Co.
Franklin Process Co.
Industrial Fibre Co.
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American Laundry Mchry. Co.
Briggs-Shaffner Co.
Butterworth & Sons Co., H. W.
Cocker Mch. & Fdry. Co.
Electro Bleaching Gas Co.
Firsching, J. A.
Fletcher Works.
Franklin Process Co.
Hall & Sons, Robert, Bury, Ltd.
Hunt Machine Co., Rodney.
Johnson, Chas. B.
Kemp Mfg. Co., C. M.
Klauder-Weldon Dyeing Mch. Co.
Liberty Coppersmithing Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Schaum & Uhlinger.
Textile Finishing Machinery Co., The.
Tolhurst Machine Works.

DYEING MACHINES (PACKAGE AND SPOOL).
Franklin Process Co.
Cocker Machinery & Foundry Co.

DYE BAGS OR NETS.
Smith Mfg. Co.

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DYE VATS AND TUBS.
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American Diamalt Co.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Borne, Scrymser Co.
Bosson & Lane.
DuPont de Nemours & Co., E. I.
Ciba Co., Inc.
Electro Bleaching Gas Co.
Fleischmann Co., The.
Ford Co., J. B.
General Dyestuff Corp.
Grasselli Dyestuffs Corp.
Houghton & Co., E. F.
Kali Mfg. Co.
Lennig & Co., Chas.
Mathieson Alkali Works, Inc.
National Aniline & Chemical Co.
Neutrasol Products Corp.
Newport Chemical Wks.
Parsons Chemical Co.
Roessler & Hasslacher Chemical Co.
Penick & Ford Sales Co., Inc.
Rohm & Haas Co.
Sandoz Chemical Works.
Staley Mfg. Co., A. E.
Surpass Chemical Co.
United Chemical Products Corp.
Wolf & Co., Jacques.

ELECTRIC CONDUIT AND FITTINGS.
(See Electrical Machinery and Supplies.)

ELECTRIC DYNAMOS AND MOTORS.
(See Motors and Generators.)

ELECTRIC FANS.
(See Fans—Electric.)

ELECTRIC HAMMERS.
Walraven Co.

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(See Lamps.)

ELECTRIC LAMP GUARDS.
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Chapman Electric Neutralizer Co.

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(See Illuminating Engineers.)

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Cutler-Hammer Mfg. Co.
Fairbanks Morse & Co., Inc.
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Independent Pneumatic Mchry. Co.
Lincoln Electric Co.
Mills & Lupton Supply Co.
Sturtevant Co., B. F.
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(See Motors.)

ELECTRIC POWER.
(See Power.)

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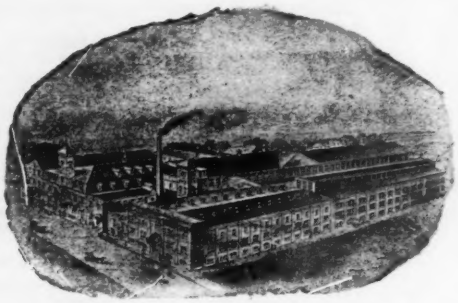

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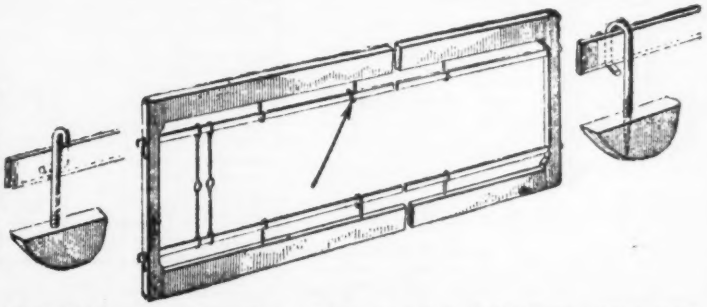

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(See Tractors and Trucks—Electric.)

ELEVATORS.
Curtis Pneumatic Machinery Co.
Link-Belt Company.
Mathews Conveyor Co.

ELEVATORS—PORTABLE.
Mathews Conveyor Co.

ENAMEL MILL WHITE.
(See Paint.)

ENGINES—OIL, GAS AND GASOLINE.
Allis-Chalmers Mfg. Co.
Fairbanks Morse & Co., Inc.
Hardeman, Isaac.
Walraven Co.

ENGINES (STEAM).
Allis-Chalmers Mfg. Co.
Hardeman, Isaac.
Lombard Iron Works & Supply Co.
Sturtevant Co., B. F.
Toomey, Frank.
Walraven Co.
Westinghouse Elec. & Mfg. Co.

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Jenkins Bros.
Lunkenheimer Co.
Mills & Lupton Supply Co.
Sturtevant Co., B. F.
Walraven Co.
Westinghouse Elec. & Mfg. Co.

ENGINEERS—CONSULTING, AND EFFICIENCY).
Ernst & Ernst.
Leper & Co., Ralph H.

ENGINEERS—MILL.
(See Architects.)

EXHAUSTERS.
(See Blowers.)

EXPORTERS—COTTON.
(See Brokers.)

EXTRACTORS—HYDRO.
American Laundry Mchry. Co.
Fletcher Works.
Philadelphia Drying Mchy. Co.
Schaum & Uhlinger.
Tolhurst Machine Works.

FACTORY AND INDUSTRIAL SITES.
(See Industrial Sites.)

FACTORY MANAGEMENT SYSTEMS.
Ernst & Ernst.
Leper & Co., Ralph H.

FANS—ELECTRIC.
Benjamin Electric Mfg. Co.
Buffalo Forge Co.
Carrier Air Conditioning Co.
Carter Electric Co.
Centrif-Air Machine Co.
Century Electric Co.
General Electric Co.
Hardeman, Isaac.
Sturtevant Co., B. F.
Westinghouse Elec. & Mfg. Co.

FANS—CONVEYING, POWER AND EXHAUST.
(See Blowers and Blowing Systems.)

FASTENERS—BELT.
(See Belt Fasteners.)

FEED WATER PURIFIERS.
(See Boiler Feed Water Purification.)

FEEDERS.
(See Automatic Feeders.)

FELTING MACHINERY.
Proctor & Schwartz, Inc.

FENCE—STEEL AND IRON.
Cyclone Fence Co.

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Southern Wood Preserving Co.

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Cyclone Fence Co.

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Howard Bros. Mfg. Co.

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U S Bobbin & Shuttle Co.

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(See Theatre Equipment.)

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Lennig & Co., Chas.

FILTER CLOTHS.
Smith Mfg. Co.

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(See Dyers, Bleachers and Finishers.)

FINISHING MACHINERY.
(See Dyeing, Bleaching and Finishing Machinery.)

FINISHING, BLEACHING AND SIZING MATERIALS).
American Diamalt Co.
Arabol Mfg. Co.
Armour & Co.
Arnold, Hoffman & Co.
Borne, Scrymser Co.
Bosson & Lane.
Ciba Co., Inc.
Corn Products Refining Co.
DuPont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Fleischman Co., The.
Ford Co., J. B.
General Dyestuff Corp.
Houghton & Co., E. F.
Kali Mfg. Co.
Keever Starch Co.
Lennig & Co., Chas.
Mathieson Alkali Works, Inc.
National Aniline & Chemical Co.
Neutrasol Products Corp.
Newport Chemical Works.
Penick & Ford Sales Co., Inc.
Quaker City Chemical Co.
Roessler & Hasslacher Co.
Rohm & Haas Co.
Spier, Simmons & Co., Inc.
Staley Mfg. Co., A. E.
United Chemical Products Corp.
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Wolf & Co., Jacques.

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Truscon Steel Co.

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(See Hose—Fire.)

FIRE PROTECTING PAINT.
(See Paint.)

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Allis-Chalmers Mfg. Co.

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(See Scrubbing Powders.)

FLOOR SWEEPS.
(See Brushes.)

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Lombard Fdry. & Mch. Wks.

FOUNTAINS—DRINKING.
Bundle-Spence Mfg. Co.
Taylor Co., Halsey W.

FRICTION CLUTCHES.
(See Clutches—Friction.)

FULLING MACHINES.
Hunt Mch Co., Rodney.

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Smith Mfg. Co.

FURNITURE—MILL.
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Carter Electric Co.
Walraven Co.

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Procter & Schwartz, Inc.

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(See Engines—Gas.)

GAS SYSTEMS.
Kemp Mfg. Co., C. M.

GASOLINE LIGHTING SYSTEMS, LANTERNS, ETC.
Hardeman, Isaac.
Smith Mfg. Co.

GASOLINE CAMP STOVES.
Smith Mfg. Co.

GATES (FENCE).
(See Fence.)

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Walraven Co.

GAUGE—OIL.
Lunkenheimer Co.
Walraven Co.

GAUGES (LIQUID LEVEL).
Lunkenheimer Co.
Taylor Inst. Co.

GAUGES—WATER.
Lunkenheimer Co.
Walraven Co.

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Dodge Mfg. Co.
General Electric Co.
Hood Foundry Wks.
Link-Belt Company.
Walraven Co.

GEARS (SILENT).
Diamond State Fibre Co.

GEAR BLANKS.
Hood Foundry Works.

GEAR BLANKS (FIBRE).
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GEAR PULLERS.
General Electric Co.

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(See Motors and Generators.)

GOVERNORS—PUMP.
General Electric Co.

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Ernst & Ernst.
Leper & Co., Ralph H.

GRAPHITE.
Dixon Crucible Co., Jos.

GRATES—BOILER.
Hardeman, Isaac.
International Engineer'g Wks.
Lombard Fdy. & Mch. Co.

GRATES—MECHANICAL.
(See Stokers.)

GREASE.
(See Lubricants.)

GRAVEL.
Montgomery Gravel Co.

GREASE CUPS.
(See Lubricators.)

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(See Card Grinding Machinery.)

GUARDS—ELECTRIC LAMP.
(See Electric Lamp Guards.)

GUDGEON ROLLS.
Washburn.

GUIDES—THREAD.
Palmer Co., I. E.

GUMS.
(See Finishing and Sizing Materials.)

HANGERS.
(See Shafting and Hangers.)

HANK CLOCKS.
(See Counters.)

HARNESS—LOOM.
(See Loom Harness.)

HARNESS TWINE.
Harris Co., Geo. W.

HARNESS HOOK.
Tite Lock Harness Hook Co.

HEADS—BOBBIN AND SPOOL.
Lestershire Spool & Bobbin Co.
Parker Co., Walter L.
U S Bobbin & Shuttle Co.
Wilson Bros. Bobbin Co., Ltd.

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(See Ventilating Apparatus.)

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Link-Belt Company.
Ryerson & Son, Inc., Jos. T.
Walraven Co.

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Walraven Co.

HOPPER FEEDERS.
(See Automatic Feeders.)

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HOSIERY FORMS.
(See Drying Forms.)

HOSIERY YARNS.
(See Yarn Manufacturers.)

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Hotel Martinique.
Hotel Sinton.
Hotel Tuller.

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Carrier Air Conditioning Co.
Carrier Eng. Corp.
Hardeman, Isaac.
Parks-Cramer Co.
Sturtevant Co., B. F.

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Taylor Instrument Co.

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Taylor Instrument Co.

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(See Turbines—Hydraulic.)

HYDRO-ELECTRIC POWER.
Columbus Elec. & Power Co.
Georgia Railway & Power Co.

HYDRO EXTRACTORS.
(See Extractors.)

ILLUMINATING ENGINEERS.
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Huntington & Guerry, Inc.

INDICATING AND RECORDING INSTRUMENTS AND THERMOMETERS.
General Electric Co.
Root Co.
Taylor Instrument Co.
Westinghouse Elec. & Mfg. Co.

INDIGO.
(See Dyestuffs and Chemicals.)

INDUSTRIAL SITES.
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Columbia Chamber of Commerce.
Columbus, Ga.
Columbus Elec. & Power Co.
Greenville Chamber of Commerce.
Nashville Industrial Corp.
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Tennessee Electric Power Co.

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Bradley Mfg. Co., A. J.

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Ryerson & Sons, Inc., Jos. T.

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Dufur & Co.
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JACK SPOOLS.
(See Spools.)

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JACQUARD HEDDLES.
Steel Heddle Mfg. Co.

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Dixon Crucible Co., Jos.

JUTE BAGGING MACHINE.
Proctor & Schwartz, Inc.

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(See Size Kettles.)

KETTLES—SODA.
Lombard Iron Works & Supply Co.

KIERS.
(See Bleaching Kiers.)

KIER LININGS.
Liberty Coppersmithing Co.

KNIT GOODS.
(See Cotton Cloth Commission Merchants and Dealers.)

KNIT GOODS WASHERS.
(See Washers—Cloth.)

KNITTING MACHINERY AND SUPPLIES.
Brinten Co., L.
Fidelity Machine Co.
Hemphill Mfg. Co.
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(See Belt Lacing.)

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(See Electric Lamp Guards.)

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Schaum & Uhlinger.
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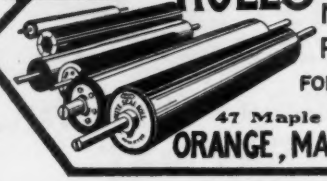

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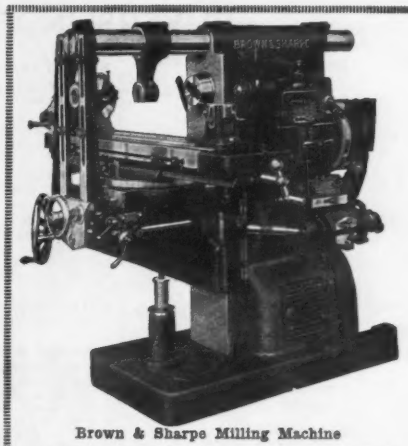

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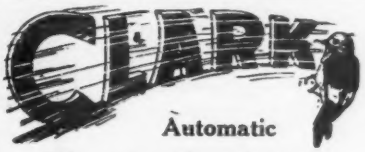

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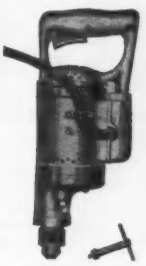

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(See Cloth.)

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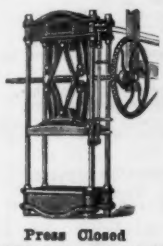

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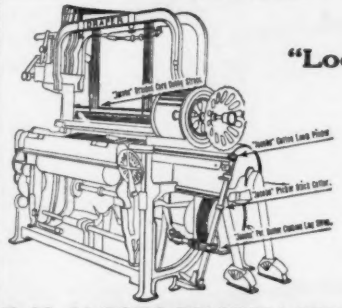

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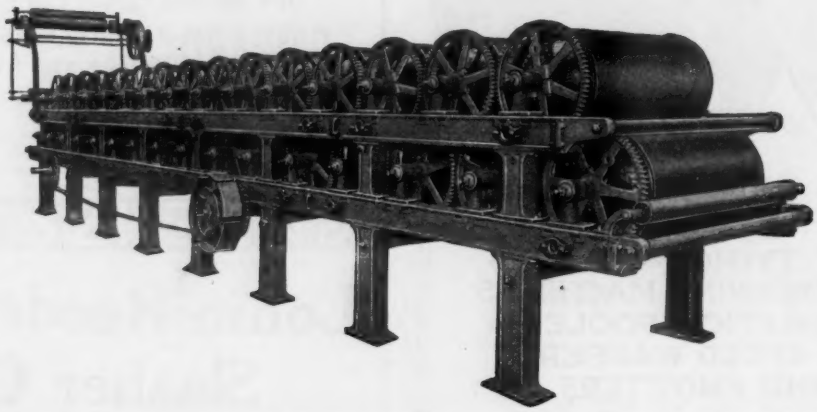

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